OneLab™

A Unified Response to Training Needs

Something is Strange – Let's Notify the LRN!

December 17, 2024

12:00-1:30PM ET

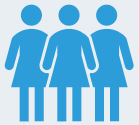
Agenda

- Introduction
  - *New and relevant OneLab™ Resources*
  - *Today's Presenters*
- Something is Strange – Let's Notify the LRN!
- Q&A: Erin Bowles, Chris Mangal, Shoolah Escott, & Alicia Branch
- Upcoming Events

Participant Rules of Engagement for the Webinar Chat

Please keep the following in mind when using the chat feature:

- **Connect with others!** React to what you're hearing, share experiences, and ask questions of your fellow participants!
- **Have a question for the presenter?** Use the Q&A function, *not* the chat.
- **Show Respect and Professionalism.** Inappropriate language, improper conduct, or any form of discrimination may result in removal from the webinar.
- **Remain on Topic.** Ensure your comments are relevant to the topic.
- **Comply with Moderators' Guidance.** If a moderator gives direction regarding chat behavior, please comply accordingly.
- **Report Issues.** Notify moderators if you experience technical difficulties or observe any disruptive behavior.



OneLab™ is excited to **announce**

Fundamentals of Working Safely with Formaldehyde and Glutaraldehyde

This new, basic-level course introduces clinical and public health laboratory professionals to the properties of formaldehyde and glutaraldehyde and the hazards, exposure routes, health effects, control measures, and response procedures for incidents involving these chemicals.

Upon completion, you can download a certificate from OneLab REACH™ under 'My Learner Hub.'

Register now on OneLab REACH

Now Available on

OneLab REACH™

Diagnostic Stewardship Toolkit

Diagnostic Stewardship supports ordering the right test for the right patient at the right time to improve patient outcomes.

- OneLab™ created this toolkit to help organizations form diagnostic stewardship teams and apply guiding principles.

Visit reach.cdc.gov to download

OneLab™ is excited to **announce**

Introduction to Clinical Laboratory Improvement Amendments (CLIA) Proficiency Testing

This basic-level eLearning course covers the fundamentals of CLIA proficiency testing (PT), explains the PT process and scoring procedures, and addresses PT referral.

- It is designed for individuals with roles associated with clinical laboratory testing and anyone interested in CLIA proficiency testing basics.
- After completing this course, learners can earn either P.A.C.E.® or CME credit.

Register now on OneLab REACH™

Disclaimer

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Today's Presenter

Chris N. Mangal, MPH

Director of Public Health Preparedness & Response
Association of Public Health Laboratories (APHL)

Today's Presenter

Erin Bowles, BS, MLS(ASCP)

Laboratory Network Coordinator

Wisconsin State Laboratory of Hygiene

Today's Presenter

Shoolah Escott MS, MLS(ASCP)

Biosafety, Biosecurity, and Bioterrorism Preparedness Trainer

OneLab™

A Unified Response to Training Needs

Something is Strange – Let's Notify the LRN

Chris N. Mangal, MPH

December 17, 2024

Discussion Topics

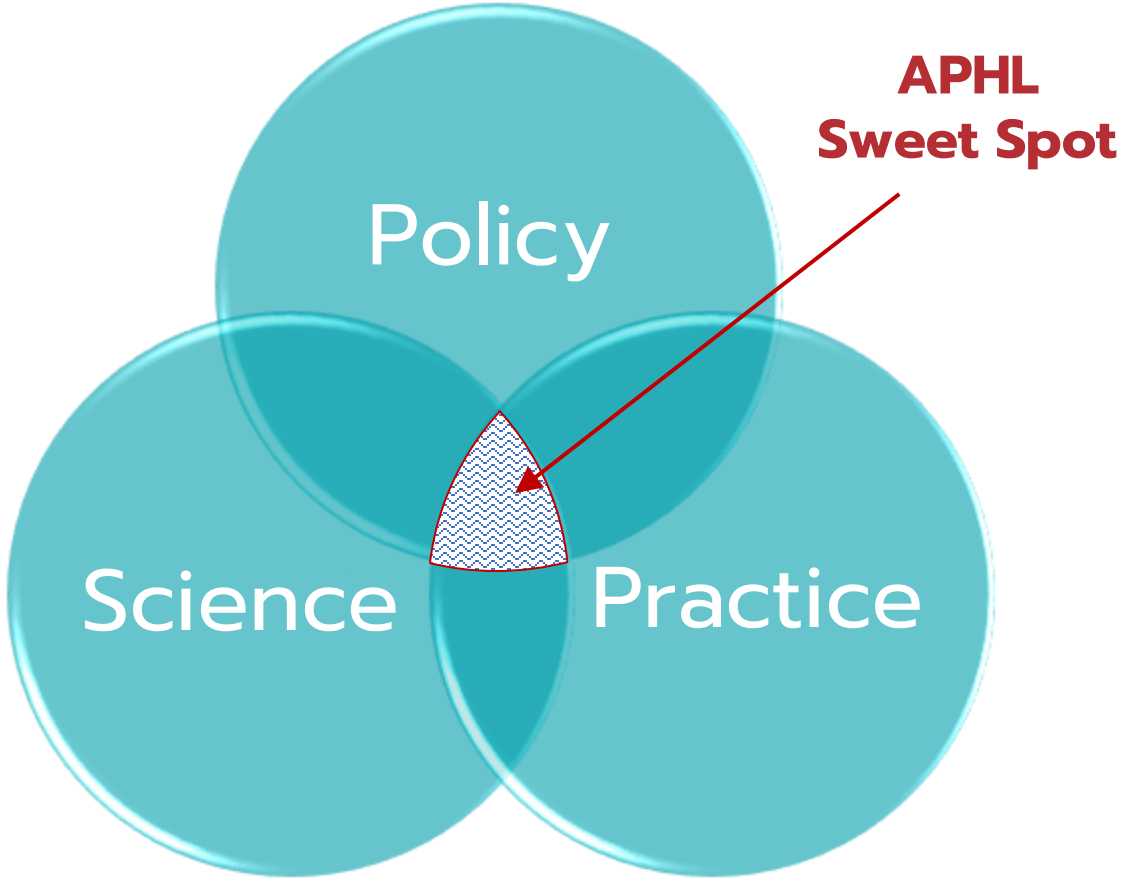
1. About APHL
2. Laboratory Response Network
3. Partners in Laboratory Preparedness and Response
4. Partner Resources for Laboratories
5. Contacts

Vision

A healthier world through quality laboratory systems.

Purpose

Shape national and global health outcomes by promoting the value and contribution of public health laboratories and continuously improving the public health laboratory system and practice.



What is APHL?

A 501(c)(3) non-profit organization

Has over 1,700 members from state and local public health laboratories, state environmental and agricultural laboratories and others including federal agencies and academic institutions.

Advocates at the national level for critical laboratory issues and for increased support/resources for member labs.

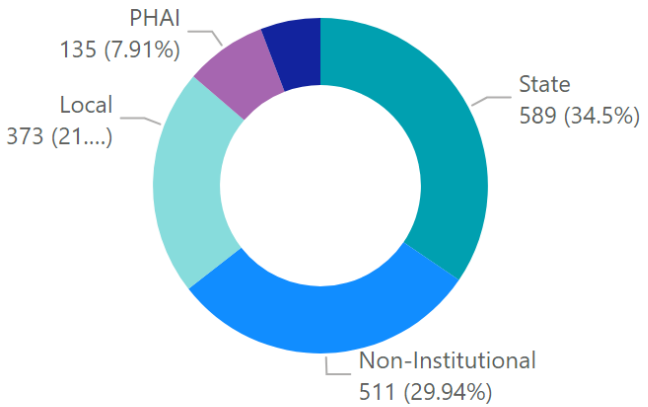
Provides training and best practices for public health laboratory policy and programs.

APHL Membership

Reporting Month

Aug-24

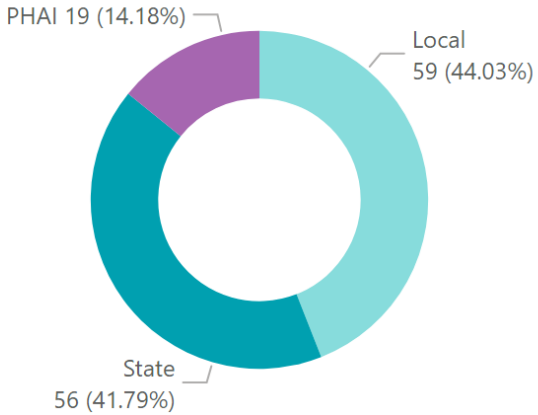
Member Count by Category



1707

Total Members

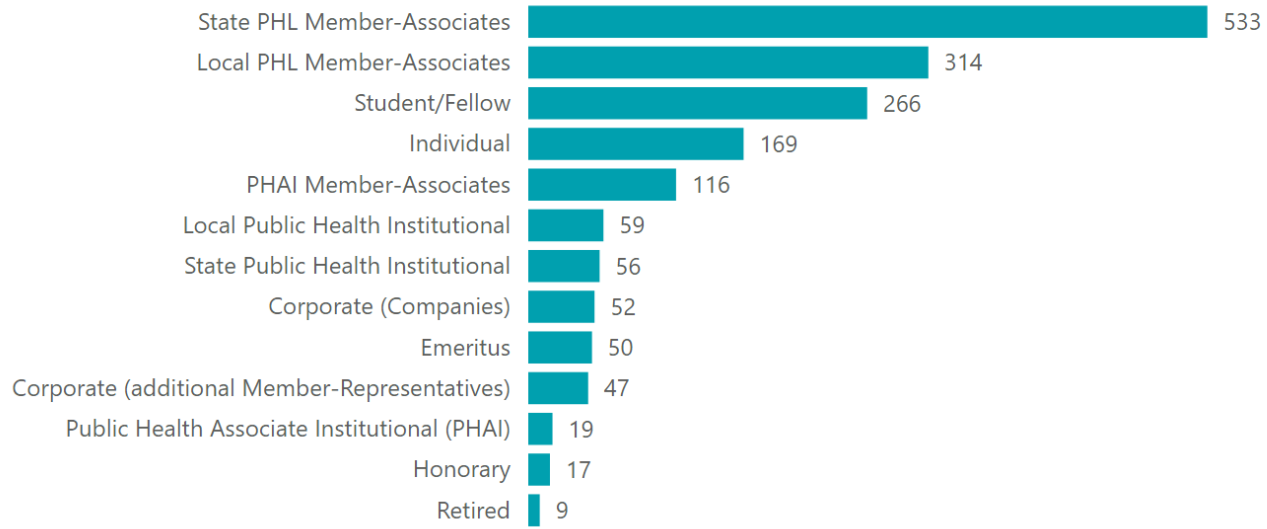
Member Laboratories



134

Total Laboratories

APHL Membership



Notable Membership Changes

New Laboratory Representatives

Vince Aoki - WA PHL

Samson Omole - ME PHL

Mark Pandori - Butte County PHL

Lead Public Health Laboratories through the Post-Pandemic Era

Advocate for the Evolving Public Health Laboratory System

- Clearly Define the Impact of Public Laboratory System Services on the Public's Health
- Engage Key Audiences about the Role and Impact of the Public Health Laboratory System
- Secure Funding to Enhance and Sustain the Public Health Laboratory System
- Promote Robust, Proactive, and Responsive Laboratory Systems in the US and Abroad

Build and Support a Resilient and Emerging Public Health Laboratory Workforce

- Support Members in Improving Staff Retention
- Strengthen the Laboratory Leadership Community with Relevant Professional Development
- Equip the Public Health Laboratory Workforce to Be Adaptable to Change
- Promote Innovative Strategies to Engage the Public Health Laboratory Workforce

Strengthen Strategic System Partnerships

- Identify and Engage New Partnerships in Support of Public Health Laboratories
- Use APHL's Elevated Voice to Strengthen Laboratory Coordination and Response
- Support Federal Partners in their Efforts to Strengthen the Laboratory System
- Work with Partners to Better Serve Vulnerable Populations

Shape the Public Health Laboratory System's Role in Advancing Diversity, Equity, Inclusion and Accessibility

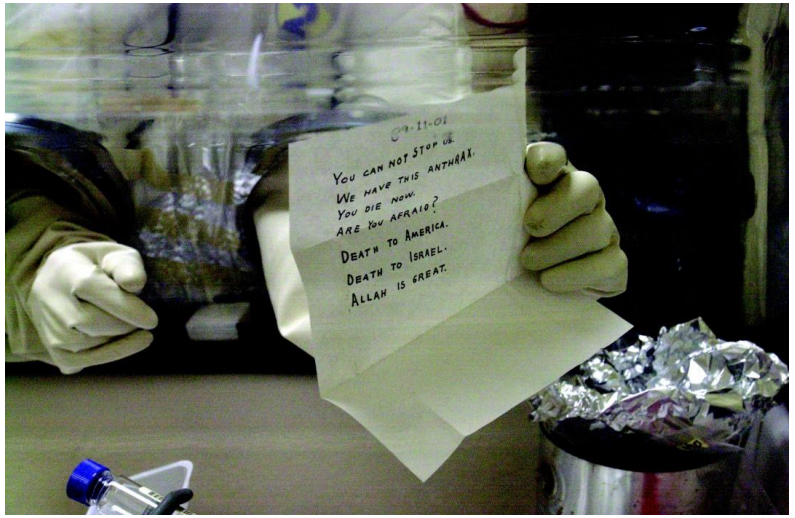
About the LRN

- Formed in 1999
- Founding Partners: APHL, CDC, FBI
- Initial focus on bioterrorism preparedness
- Has evolved to support preparedness and response to a broad range of threats

Current Mission:

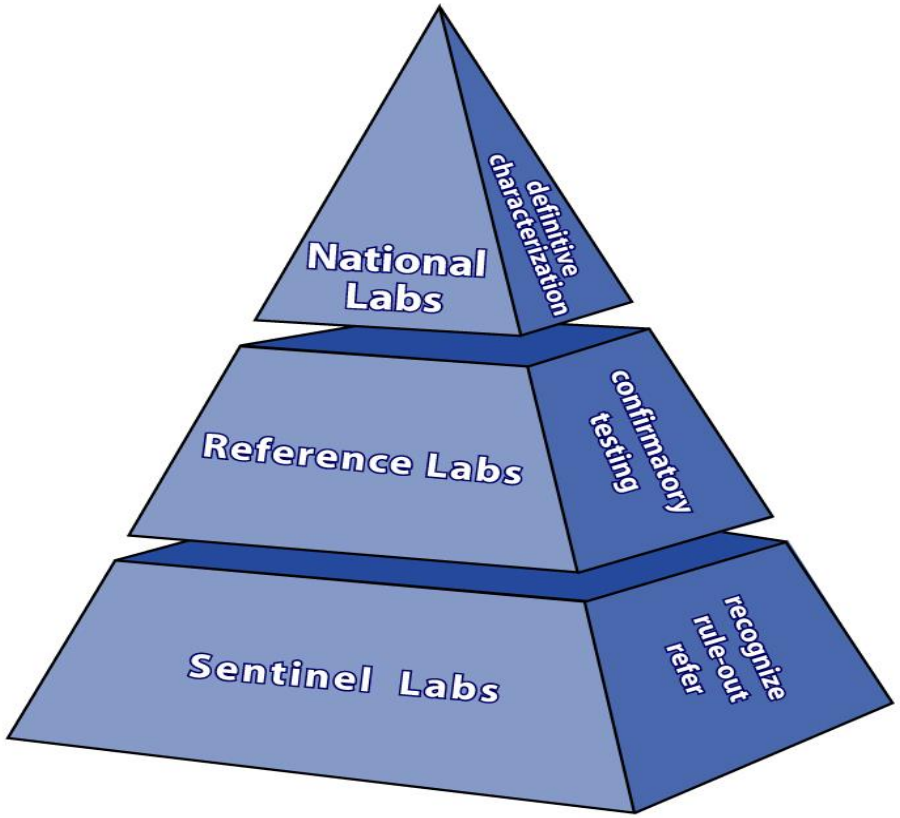
To provide rapid laboratory response to biological and chemical threats to inform critical decisions about public health and safety

https://emergency.cdc.gov/lrn/index.asp



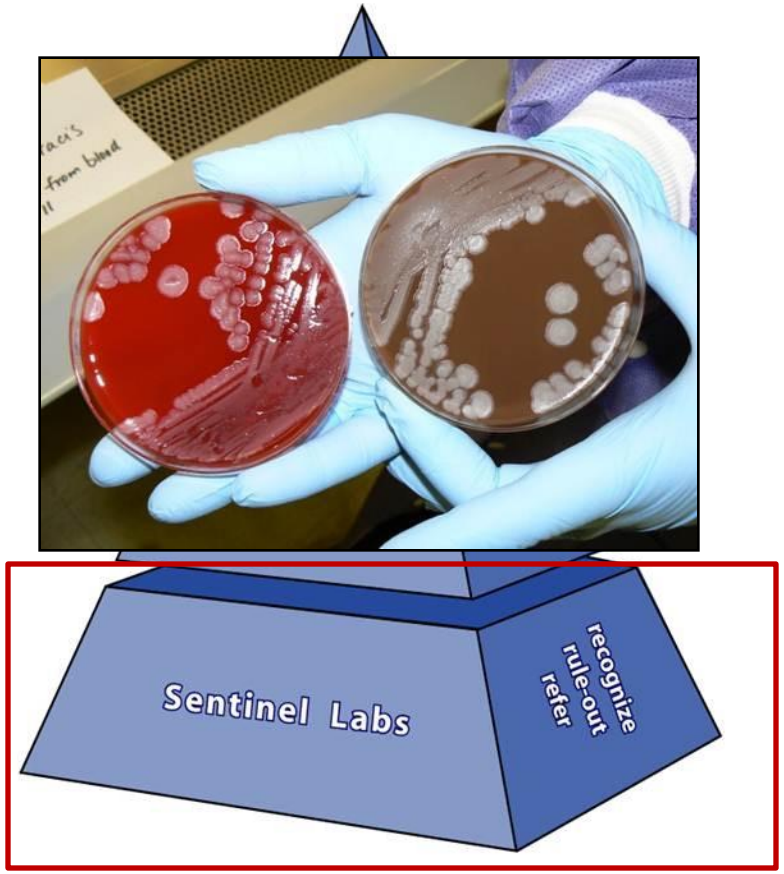
LRN™
LABORATORY RESPONSE NETWORK

LRN for Biological Threats Preparedness (LRN-B)



- Standardized reagents and protocols
- Electronic data messaging and communications
- Training and technical assistance
- Quality standards, including a robust approach to biosafety and biosecurity
- Partnerships

LRN-B: Sentinel Labs



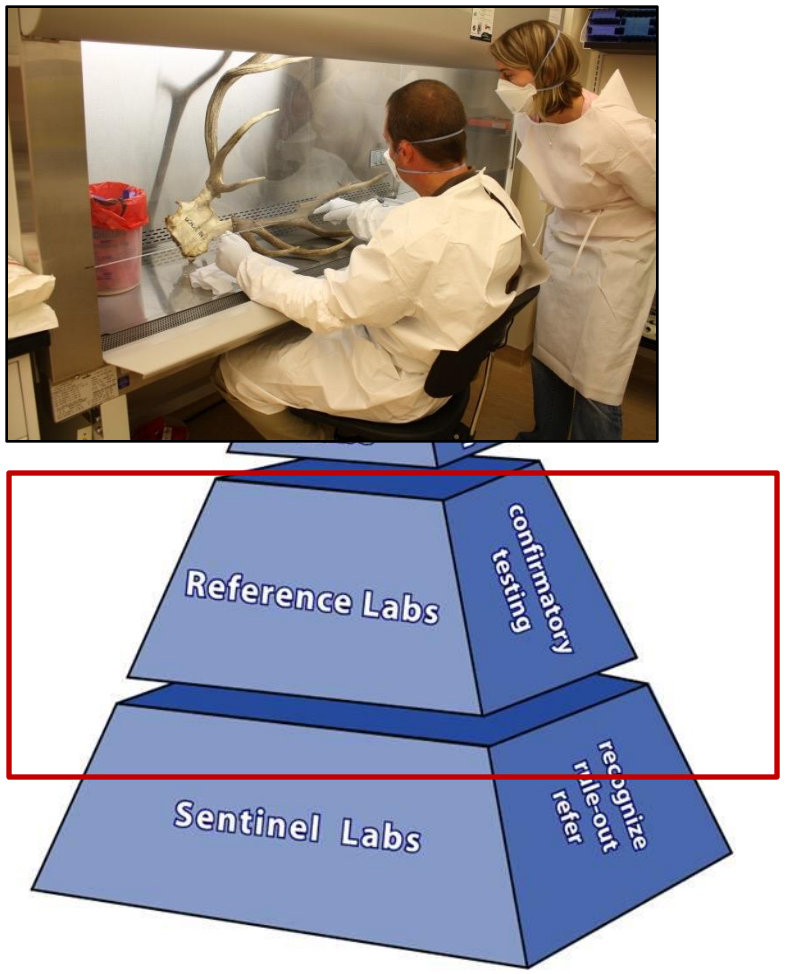
Hospitals and private clinical laboratories

Some local PHLs

Sentinel Clinical Labs

- ✓ Recognize threats and perform routine diagnostic services
- ✓ Rule-out common pathogens
- ✓ Refer specimens to reference or national laboratories for further testing, if needed

LRN-B: Reference Laboratories



Reference Laboratories:

- ✓ Public health, military, veterinary, agriculture, food, and water testing laboratories
- ✓ Receive CDC LRN-B reagents, protocols, and training
- ✓ Perform standardized tests to ensure accurate, reliable results
- ✓ Investigate and/or refer specimens and samples

LRN-B: National Labs

National Labs

- ✓ CDC
- ✓ Department of Defense

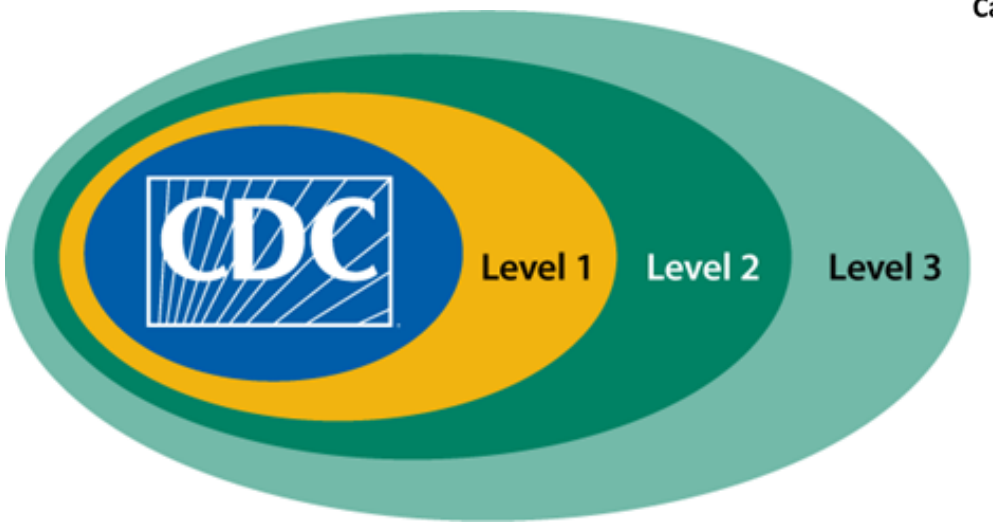
Highest technical capabilities and specialized testing

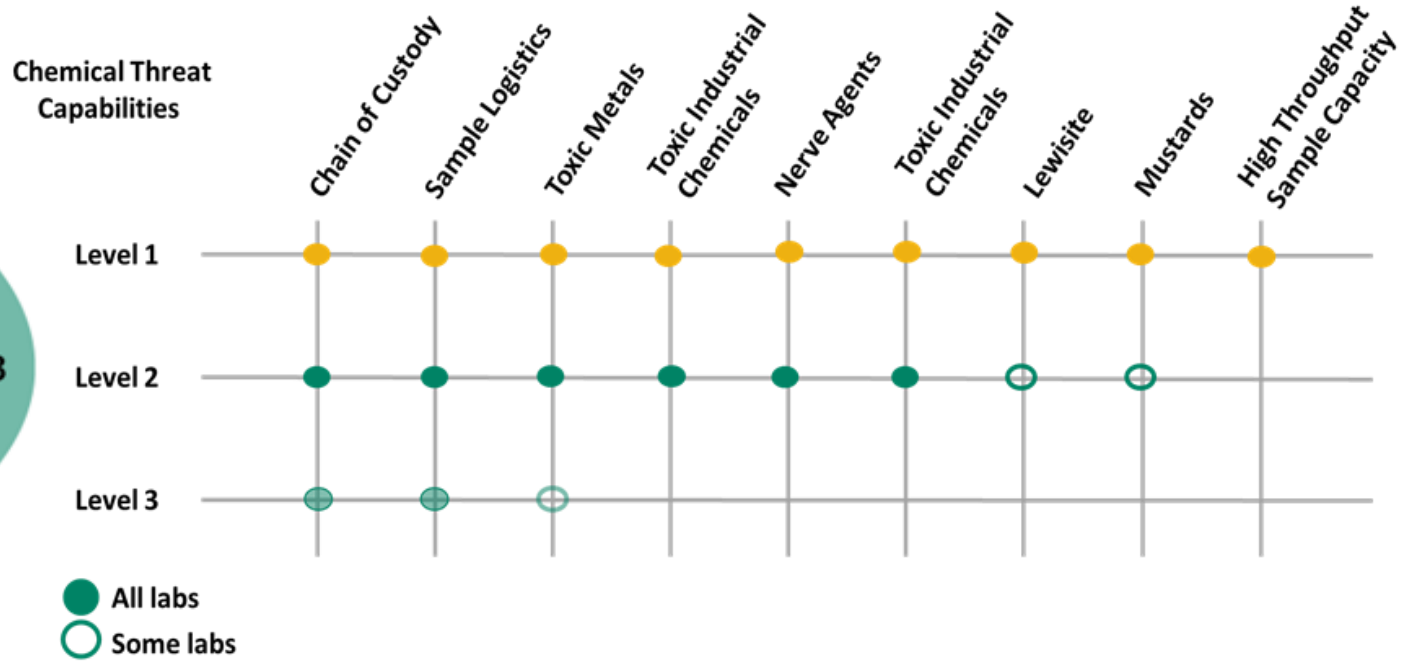
- ✓ Strain characterization
- ✓ Bioforensics

BSL-4 capabilities

Develop and deploy laboratory tests

LRN for Chemical Threats (LRN-C)





LRN for Radiological Threats

- ✓ Strong existing capabilities for radiochemistry at the state public health laboratory level
- ✓ Coordinate infrastructure and expertise
- ✓ Prioritize filling critical gaps such as workforce development

APHL's Role in the LRN

- Founding member of the LRN
- Recommendations to shape strategic direction of the network
- Funding Advocacy and Education of Policy Makers
- Public Health Emergency Preparedness (PHEP) Cooperative Agreement
- Operational Support:
  - Gatekeeping function to support public health laboratory access to the network
  - Multicenter Evaluation Studies
  - Procurement
  - Training and other technical assistance
  - Electronic Data Exchange
  - Communications, Networking and Partnerships

Something is Strange – Let's Notify the LRN!

Something is Strange – Let's Notify the LRN!

An unusual number of ill people present suddenly with similar symptoms

Something is Strange – Let's Notify the LRN!

- What? Another Listeria?
  That is 5 this week!

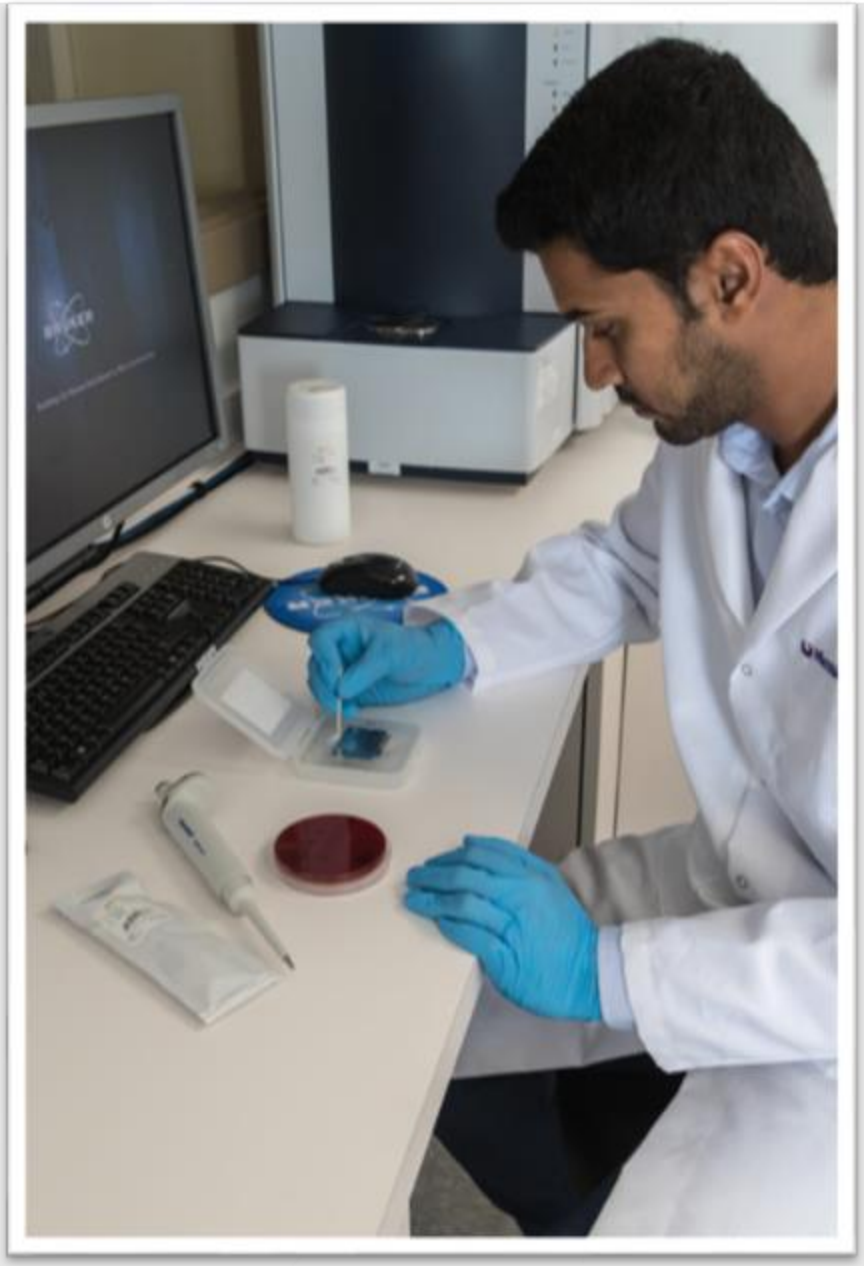
I had a couple of Listeria last week?

Me too!

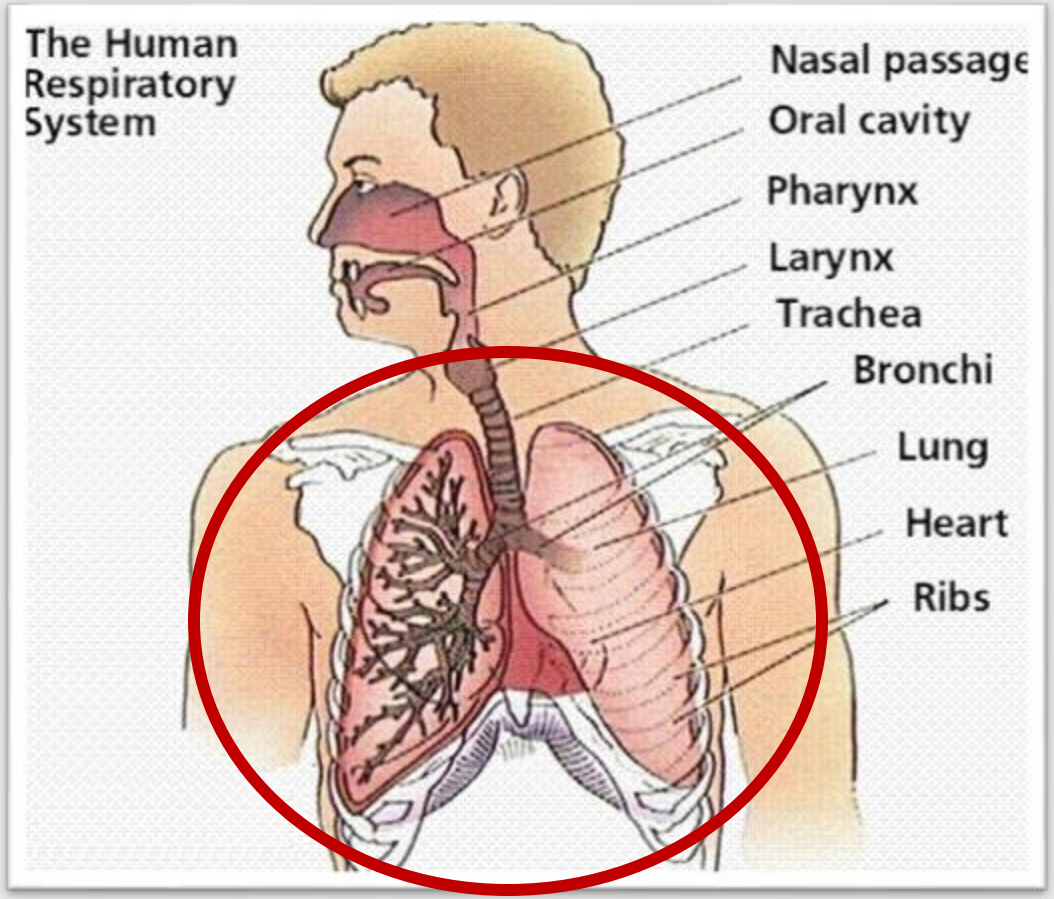
Something is Strange – Let's Notify the LRN!

"I think we may have had an exposure!"

OK, Let Me Help! Tell Me What Happened!



Key Sources to Stop and Ask "Could This be a BT Agent?"



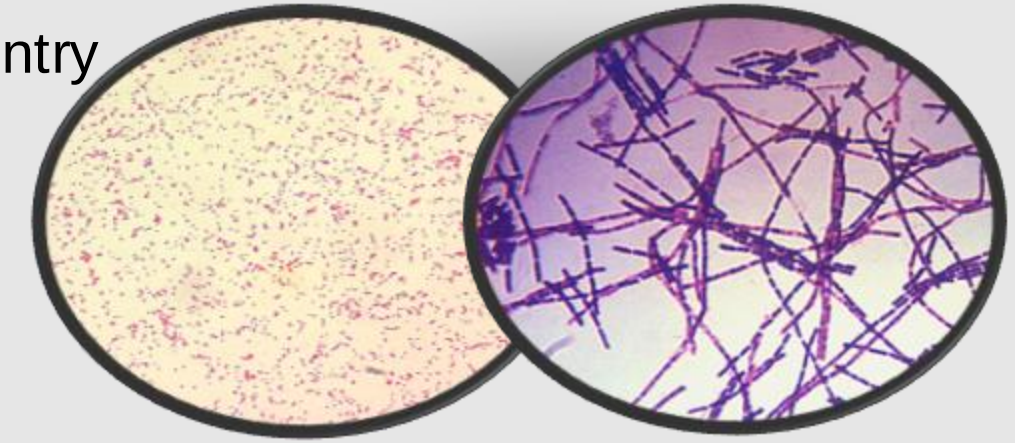
Lower Respiratory tissue and fluid

Blood and possibly sterile fluid

Wounds, inclusive of animal bites

Clues You Could Be Working With a BT Agent

- Blood culture takes longer than 24 hours to grow
- No growth or just a slight haze of growth at 24 hours
- Better growth on CHOC than BLD
- Gram stain shows tiny gram-variable coccobacilli
- Gram stain shows large boxcar shaped gram-positive bacilli
- Check the patient history:
  - Patient history notes travel to or has lived in a country where BT agents are endemic
  - Patient has had an insect bite or an animal bite
  - Patient works with animals
- Talk to the ordering physician



BIOTHREAT AGENT BIOSAFETY AWARENESS FLOW CHART

BLOOD CULTURES

Blood culture instrument signals there is a positive bottle.

Remove positive bottle to perform a Gram stain.

- Before staining, determine how long bottle has been incubating. If >24 hours, consider this may be a biotreat (BT) agent.
- Is there any patient history or a clinical note in the patient record to indicate the need to consider a possible BT agent?
- To avoid aerosols: Always make smears, allow to dry and perform any heat fixation in a certified biosafety cabinet (BSC).

Gram stain fixed slide and examine slide.

Suspect a BT agent if you see large boxcar-like Gram positive bacilli (with or without spores) or tiny GNCB.

In a BSC: Subculture positive bottles with suspected BT agent to BAP, CHOC and MAC/EMB agar plates. Tape plates shut and label: "Possible BT Agent—Open in BSC."

WOUND AND LOWER RESPIRATORY CULTURES

! Always check for any patient history or a note in the patient record to indicate a need to consider a possible BT agent.

In a BSC: Examine plates at 24 h for growth.

If no growth or only slight growth and tiny colonies, re-incubate plates.

In a BSC: Examine plates at 48 h for growth. Note:

- Time to growth?
- Which plates have growth?
- Colony morphology?
- Any hemolysis on BAP?

! STOP! Do not put the organism on MALDI–TOF or other automated ID system unless all possible BT agents have been ruled-out.

See *MALDI-TOF Safety Guide.*

In a BSC: Make a smear of the colony growth for a Gram stain and allow to dry in the BSC (See note under Blood Cultures). Also perform an oxidase and tube catalase on the colony growth.

Gram stain fixed slide and examine slide. Dependent on Gram stain result, refer to APHL's "Recognize. Rule-out. Refer." bench guide and the ASM agent-specific "Sentinel Level Clinical Laboratory Guidelines" to determine further rule-out testing to perform. Always perform rule-out testing in a BSC.

If unable to rule-out all BT agents, contact the ordering physician to discuss whether the patient's symptoms could indicate a possible BT agent.

Check if the patient has cultures from other specimens that may grow the same organism. If so, make a note in the patient electronic record on all other cultures to perform all work in a BSC due to a suspect BT agent and flag all culture media (e.g., tape/bag plates, add stickers, etc.).

Contact your LRN laboratory to notify them you have isolated a possible BT agent you are unable to rule-out and determine your next steps.

! Always verify that BSCs are certified and functioning properly before working in them. If a BSC is unavailable, see the "Biosafety" section for alternative safety measures.

Heat or methanol fixation may not kill organisms in a dried smear. There is a slight risk of aerosol production if the slide were to drop and break when staining or reading the Gram stain slide.

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APHL ASSOCIATION OF PUBLIC HEALTH LABORATORIES®

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Do not use MALDI until all BT agents are ruled-out!

Perform Rapid Blood Culture Identification inside a Biosafety Cabinet!

Verigene

BioFire

Remember:

When forwarding positive cultures to another laboratory for work-up, warn lab if sending a possible BT agent!

Rule-out Testing

- Work in BSC using BSL-3 biosafety practices:
  - Safety eyewear
  - N-95 or PAPR
  - Back opening gown
- Minimal rule-out testing you must perform:
  - Catalase (tube method is safest)
  - Oxidase
- Additional rule-out testing that is helpful to perform:
  - Motility (tube method is safest)
  - Urea
  - Indole
  - B-lactamase
  - Satellite

Photo courtesy of John Maniaci, UW Health

Contact Information of Partners and When to Contact

It Takes a Team of Partners

Determine Who is Responsible for W

Connect and Communicate with Partners

- How will you communicate
- Look at the big picture
- Ask questions
- Provide guidance
- Determine action plan for follow-up treatment or prophylaxis
- Discuss disposal of any remaining organism
- Determine who is responsible for what actions
- Evaluate and determine what changes need to be made to prevent further occurrences

Complete Exposure Assessment

- Determine who will do the exposure assessment
- General questions:
  - When did this occur?
  - Where was the organism worked with?
  - Who else was within 5 feet?
  - What PPE was worn?
  - What is the immune status of the individual working with the specimen and others who were within 5 feet?
- Specific Activities and Manipulations:
  - Answer yes or no to a list of common laboratory activities that are performed on specimens
- Based on answers determine whether there was an exposure and what it the level of risk.
- Determine what post-exposure follow up steps will be taken

Exposure Assessment and Monitoring Tool

CLINICAL LABORATORY BIOLOGICAL EXPOSURE EVALUATION TOOL

Potential Exposure Event Summary

Date of Potential Exposure: _____ **Exposure Location(s):** _____

Multiple people exposed? ☐ No ☐ Yes. *Complete this form for each person to determine individual exposure risk.*

Name/Identifier of Person Potentially Exposed: _____

Individual's Predispositions: ☐ Pregnant ☐ Immunocompromised ☐ Other: _____

Interactions with Organism

Individual worked with organism: ☐ Within BSC ☐ Outside BSC ☐ Did not work directly with organism

Individual did not work with organism, but was: ☐ Within five feet ☐ M

Individual wore: ☐ Gloves ☐ Lab coat/gown ☐ Safety glasses

Individual performed the following activities or types of manipulation wit

- ☐ Removed caps or swabs from culture containers, opened lyophilized cultures or cryotubes
- ☐ Manipulated needles, syringes or sharps
- ☐ Flamed a loop
- ☐ Wet preps
- ☐ Rapid antigen testing
- ☐ Blood culture bottle
- ☐ Exa mec
- ☐ Snif
- ☐ Cat

What work was done by whom, where and what PPE was worn? Who else was present and how close were they?

Exposure Event Follow-up

Treatment and Monitoring

Post Exposure Prophylaxis (PEP): ☐ Will begin PEP ☐ Declined PEP ☐ N/A

Serological Monitoring: ☐ Will begin serological monitoring ☐ Declined ☐ N/A

Fever Watch: ☐ Yes ☐ No ☐ N/A

Other Notes:

Corrective Actions and Mitigations

Use the risk assessment determinations above to evaluate the overall risk of exposure according to the likelihood of occurrence and severity of consequences.

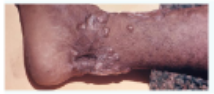
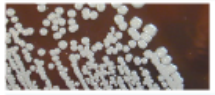
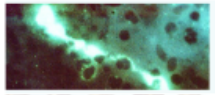
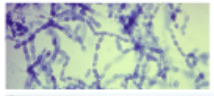
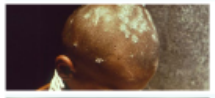
What treatment is needed and who will be monitoring the treatment?

[Laboratory Exposure Assessment and Symptom Monitoring Guide]

Exposure Monitoring Guide

PHPR_Clinical_Laboratory_Biological_Exposure_Monitoring_Guide.pdf (aphl.org)

CLINICAL LABORATORY BIOLOGICAL EXPOSURE MONITORING GUIDE

	Disease (Organism/Agent)	Notes	Exposure Risks and Routes of Transmission in the Laboratory Setting [8]	Incubation Period	Symptoms (Will depend on route of transmission)
	Anthrax, Woolsorter's disease *(Bacillus anthracis)*	1, 5*, 8, 14	Direct and indirect contact of broken skin with cultures and contaminated laboratory surfaces, accidental parenteral inoculation, exposure to infectious aerosols. LD50 is 2,500-55,000 for spores and will depend on the route of exposure. < 10 spores necessary for cutaneous anthrax infection.	Typically 1–6 days, with a range up to 60 days	**Cutaneous:** painless sore with black eschar. **Inhalational:** Fever and chills, chest discomfort, body aches. **Gastrointestinal:** Fever, chills, swelling of neck and neck glands, sore throat, painful swallowing, stomach pain, fainting, abdominal swelling. **Injection anthrax:** Fever, chills, blisters or bumps that may itch, painless skin sore with black eschar, swelling around sore.
	Blastomycosis *(Blastomyces dermatitidis)*	3, 14	Accidental parenteral inoculation with infected tissues or cultures of yeast form. Pulmonary infections from inhalation of conidia from mold-form cultures.	3 weeks – 3 months	Flu like symptoms, fever, cough, night sweats, myalgia (muscle pain) and arthralgia (joint pain), weight loss and anorexia, chest pain, fatigue.
	Brucellosis, Undulent fever, Malta fever, Mediterranian fever *(Brucella abortus, B. suis, B. melitensis)*	1, 5, 14	*Brucella spp.* have a very low infectious dose and are easily aerosolized. Ingestion, inhalation, accidental parenteral inoculation or contact with broken skin or mucosa. Direct exposure to samples or cultures (outside containment). ID is 10-100 organisms by aerosol or subcutaneous exposure.	5 days – 5 months	**Initial symptoms:** fever, sweats, malaise, anorexia, headache, pain in muscles, joint, and/or back, fatigue. **Chronic symptoms:** recurrent fevers, arthritis, swelling of the testicle and scrotum area, swelling of the heart (endocarditis), neurologic symptoms (in up to 5% of all cases), chronic fatigue, depression, swelling of the liver and/or spleen.
	Glanders *(Burkholderia mallei)*	1, 5*, 14	Ingestion, inhalation, accidental parenteral inoculation, and contact with broken skin or mucosa with cultures and infected tissues, purulent drainage, blood and sputum. There is increased risk for individuals with diabetes.	1–14 days	Fever with chills and sweating, muscle aches, chest pain, muscle tightness, headache, nasal discharge, light sensitivity (sometimes with excessive tearing of the eyes), ulceration at the site of localized infection, lymphadenopathy, abscess formation.
	Meliodosis, Whitmore's disease *(Burkholderia pseudomallei)*	1, 5*, 14	Ingestion, inhalation, inoculation, and direct contact via skin abrasions and mucous membranes.	1 day – years	**Localized:** Localized pain or swelling, fever, ulceration, abscess. **Pulmonary:** Cough, chest pain, high fever, headache, anorexia. **Bloodstream:** Fever, headache, respiratory distress, abdominal discomfort, joint pain, disorientation. **Disseminated:** Fever, weight loss, stomach or chest pain, muscle or joint pain, headache, seizures.
	Psittacosis *(Chlamydia psittaci)*	1, 14	Infectious aerosols in the handling, care, or necropsy of naturally or experimentally infected birds, mice and eggs.	5–14 days	Abrupt onset of fever and chills, headache, muscle aches, nonproductive cough, splenomegaly, rash.
	Botulism *(Clostridium botulinum toxin)*	1, 5*, 13	Exposure to toxin, and especially associated with activities that have high potential for aerosol or droplet formation. 0.7-0.9 µg of inhaled aerosolized toxin is likely enough to kill a 70 kg / 150 lb person.	6 hours – 10 days	Double vision, blurred vision, drooping eyelids, slurred speech, difficulty swallowing, difficulty breathing, thick-feeling tongue, dry mouth, muscle weakness.
	C. diff *(Clostridioides difficile)*	1, 14	Infectious aerosols are the most likely route of laboratory-associated infections (LAI) and could serve as a reservoir for vegetative cells and spores.	2–3 days	Severe diarrhea, fever, stomach tenderness or pain, loss of appetite, nausea.
	Coccidiomycosis, Valley Fever *(Coccidioides immitis, C. posadasii)*	3, 14	Inhalation of spores. Rarely, contact with broken skin can cause cutaneous infection.	1–3 weeks	Fatigue, cough, fever, shortness of breath, headache, night sweats, muscle aches or pains, rash on upper body or legs.
	Q fever *(Coxiella burnetii)*	1, 5, 9, 14	Inhalation of infectious aerosols. Accidental parenteral inoculation. Exposure to experimentally or naturally infected animals, their tissues, or body fluids. ID by inhalation is ~10 organisms.	9–39 days	**Acute:** Fever, chills, myalgia, arthralgia, headache, pneumonia, hepatitis.
	Dermatophytosis, Ringworm *(Microsporum, Epidermophyton and Trichophyton)*	3, 14	Contact with skin, nail lesions, contact with contaminated surfaces.	4–14 days after skin comes in contact with fungus	Ringworm can affect skin on almost any part of the body as well as fingernails and toenails. The symptoms of ringworm often depend on which part of the body is infected, but they generally include itchy skin, ring-shaped rash, red, scaly, cracked skin and hair loss.
	Encephalitis, EEE (Eastern Equine Encephalitis virus)	2, 5, 6, 12	Inhalation of infectious aerosols, accidental parenteral inoculation. Exposure to infected animals and mosquitoes in the lab.	1–10 days	Sudden onset of headache, high fever, chills, and vomiting; severe cases may progress to disorientation, seizures, or coma.

Completion of Federal Select Agent Program (FSAP) Forms

Form 3

(Only complete if there were exposures)

- Submitting lab must notify FSAP of exposures within 24 hours of confirmed BT agent identification by WSLH
- Submitting lab completes form 3 and submits to FSAP

Form 4

(Must always complete)

- WSLH notifies FSAP of identification of a select agent.
- WSLH completes their section of Form 4 as the identifying laboratory and submits to FSAP
- Submitting lab completes their section of Form 4 as the submitting laboratory and submits to FSAP

Destruction of All Positive Culture Media

- Check if patient has other cultures
  - If does, warn about positive BT isolate
- Gather all positive culture media
- **All isolates and positive cultures must be killed in your facility before transporting off site for disposal**
  - **Note: medical waste hauler can't destroy for you**
- Destruction methods:
  - Autoclave – solids and liquids
  - Chemical destruction
- Destruction must occur within 7 days of confirmation of a select agent

APHL Resource: "*Clinical Laboratory Preparedness and Response Guide*"

- *Decontamination of Select Agents Isolated in the Clinical Laboratory* **(see handout)**

Decontamination of Select Agents Isolated in the Clinical Laboratory

APHL™
www.aphl.org

Select Agent regulations detailed in 7 CFR 331, 9 CFR 121 and 42 CFR 73 require that material containing an identified select agent must either be **destroyed or transferred** to a select agent registered facility within 7 days from confirmation (unless an extension is granted from CDC). Select agents may only be held more than 7 days from confirmation by facilities that are registered and approved by CDC and/or USDA to possess those specific select agents. Once an isolate from a patient specimen in a non-select agent registered clinical lab has been confirmed by a registered Laboratory Response Network (LRN) reference laboratory as a select agent, within 7 days the non-registered clinical lab must either **destroy** all other relevant patient specimens and cultures remaining in their possession **or obtain permission from CDC to transfer** them to the nearest LRN reference laboratory that is registered to possess the specific select agent.

If a clinical lab chooses to **transfer the relevant specimens and cultures** after organism confirmation, the lab personnel will need to work with their LRN reference laboratory to ensure the proper paperwork (e.g., APHIS/CDC Form 2) and transfer protocols are followed in compliance with all applicable local, state, and federal shipping regulations, and carrier/courier requirements **prior to transport**. Transfer considerations should be discussed between clinical laboratories and LRN reference laboratories *before* LRN reference testing is conducted to avoid some potential shipping restrictions or dilemmas. If a facility does not have an autoclave on-site and chooses not to chemically decontaminate the cultures, all positive cultures including blood culture bottles must be transferred to an appropriate select agent registered laboratory approved and willing to accept the specific select agent material.

Determine Root Cause

Ask 5 "whys" to get to the underlying root cause of the problem?

Why was there an exposure?

Why?

Aerosol created when spotting isolate for Maldi-TOF ID on open bench

Why?

Trying to get rapid results to physician for patient care and no Gram stain performed on isolate

Why?

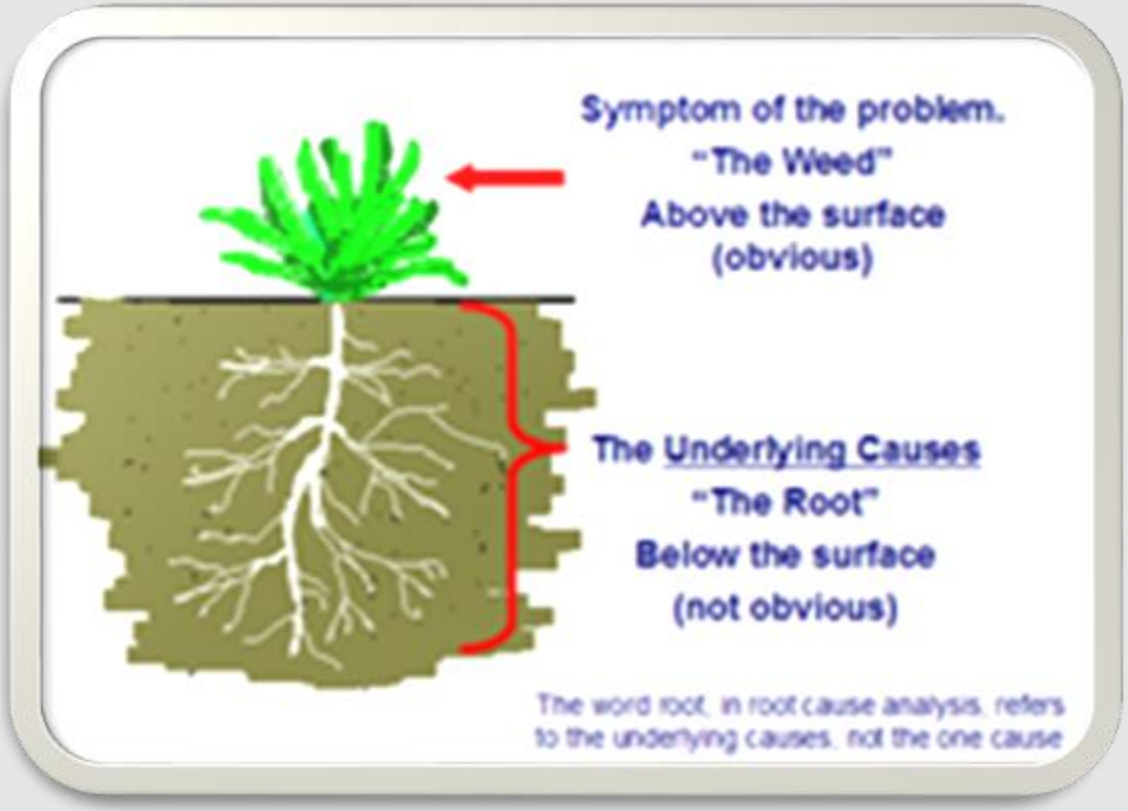
Didn't suspect a BT agent from a synovial fluid inoculated into a blood culture bottle

Why?

No policy in place to do a Gram stain routinely before performing Maldi-TOF

Why?

Missed clues of slow growth and never checked patient history



Root Cause: Speed more important than safety?

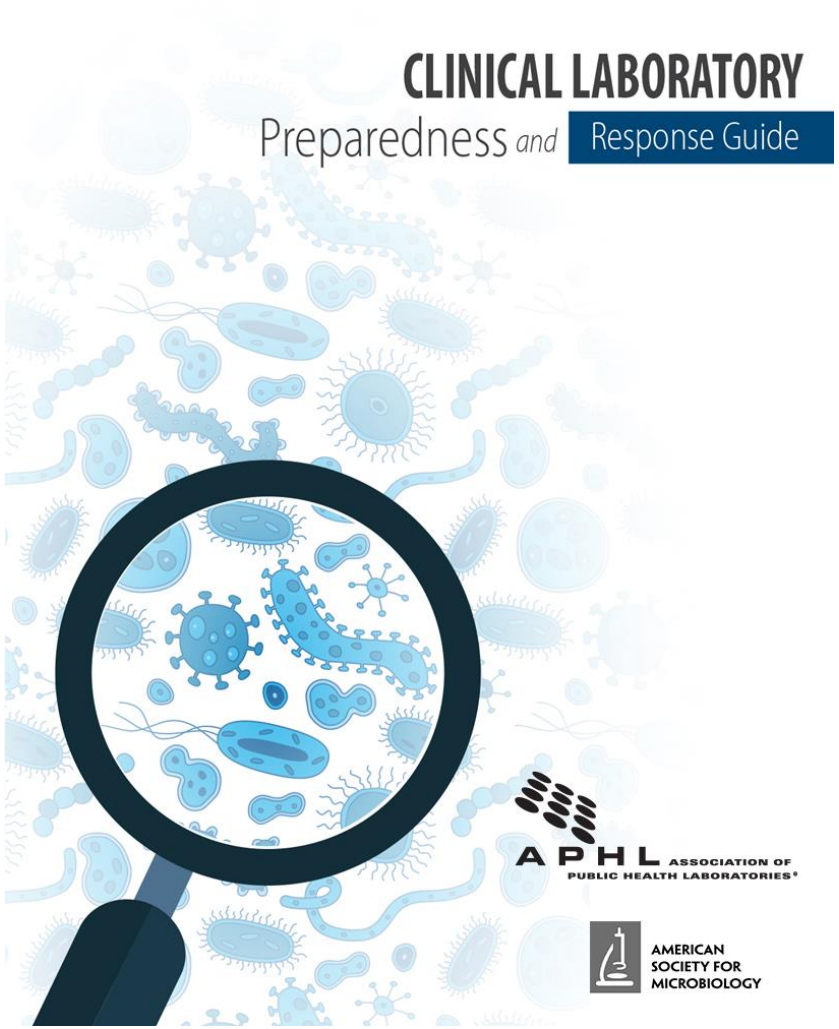
Repeat Risk Assessment

- What new hazards were identified in the root cause analysis?
  - Speed!
  - High volume!
  - Robotic! Not thinking about source and growth time.
- Evaluate the risk
  - High risk
- What else can be done to mitigate the risk?
  - Slow grower spot MALDI plates in BSC
  - Prepare and dry Gram stain in BSC
  - Read the Gram stain before running MALDI
  - Provide training
- Implement controls
- Review effectiveness and continue to adjust as needed

Updates coming in 2025 version

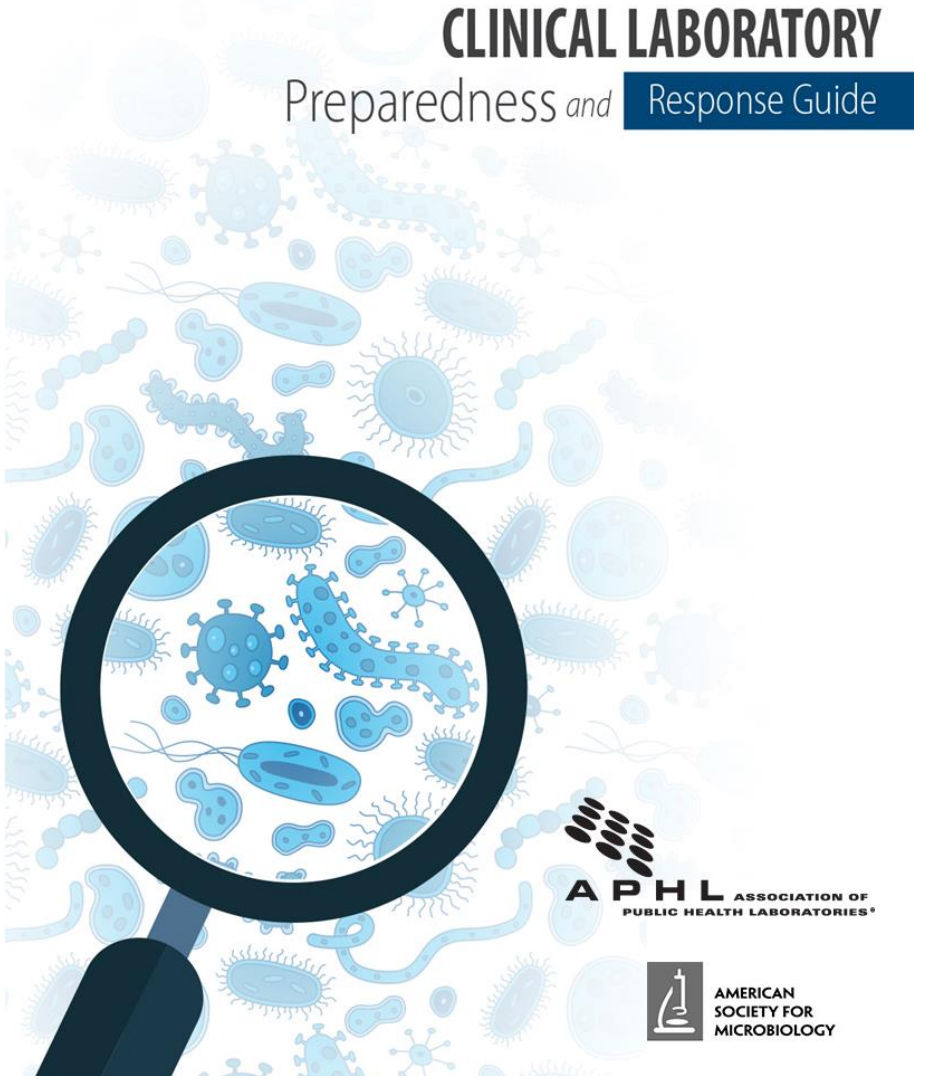
- The updated “Clinical Laboratory Preparedness and Response Guide” once again will serve as a complete reference document for Sentinel Clinical Laboratories.

- The updated guide will continue to assist the public health laboratory system in preparing and responding more quickly and efficiently to public health and laboratory emergencies.



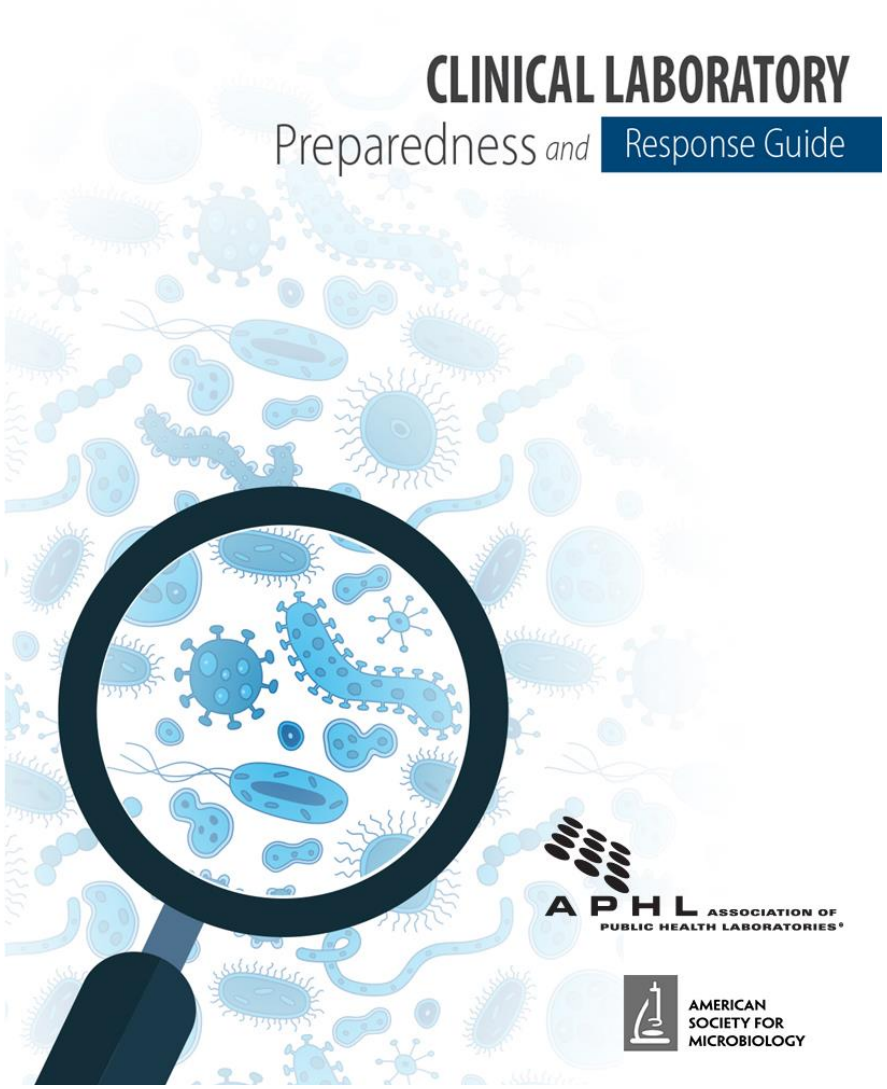
Sections Reviewed and Updated

- Introduction
- Biosafety Basics
  - Decontamination of Select Agents Isolated in the Clinical Laboratory
  - Biothreat Agent Biosafety Awareness Flow Chart (NEW)
- Biosecurity Basics:
  - Biosecurity Checklist (NEW)
  - Biosecurity Risk Management Worksheet (NEW)
- Regulations That Impact Clinical Laboratories



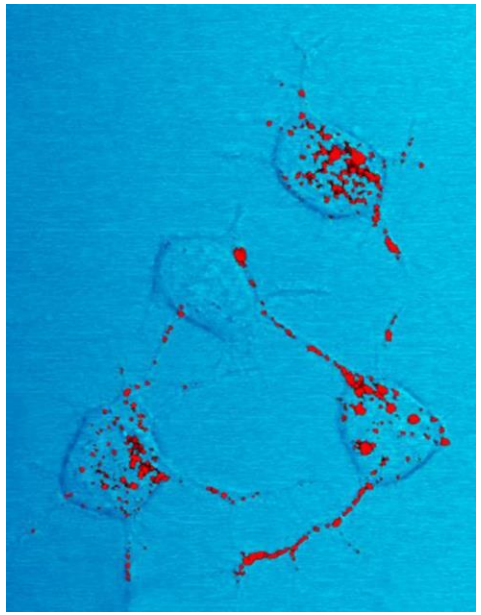
Sections Reviewed and Updated

- Quick Reference Guide to Specimen Collection of Suspected Agents of Bioterrorism
- Biothreat organism-specific technical content updated with the following key changes:
  - *Bacillus anthracis* and *Bacillus cereus* biovar *anthracis*
  - New *Brucella* spp. (Formerly *Ochrobactrum* spp.)
- Packaging and Shipping
  - APHL P&S Tool Kit

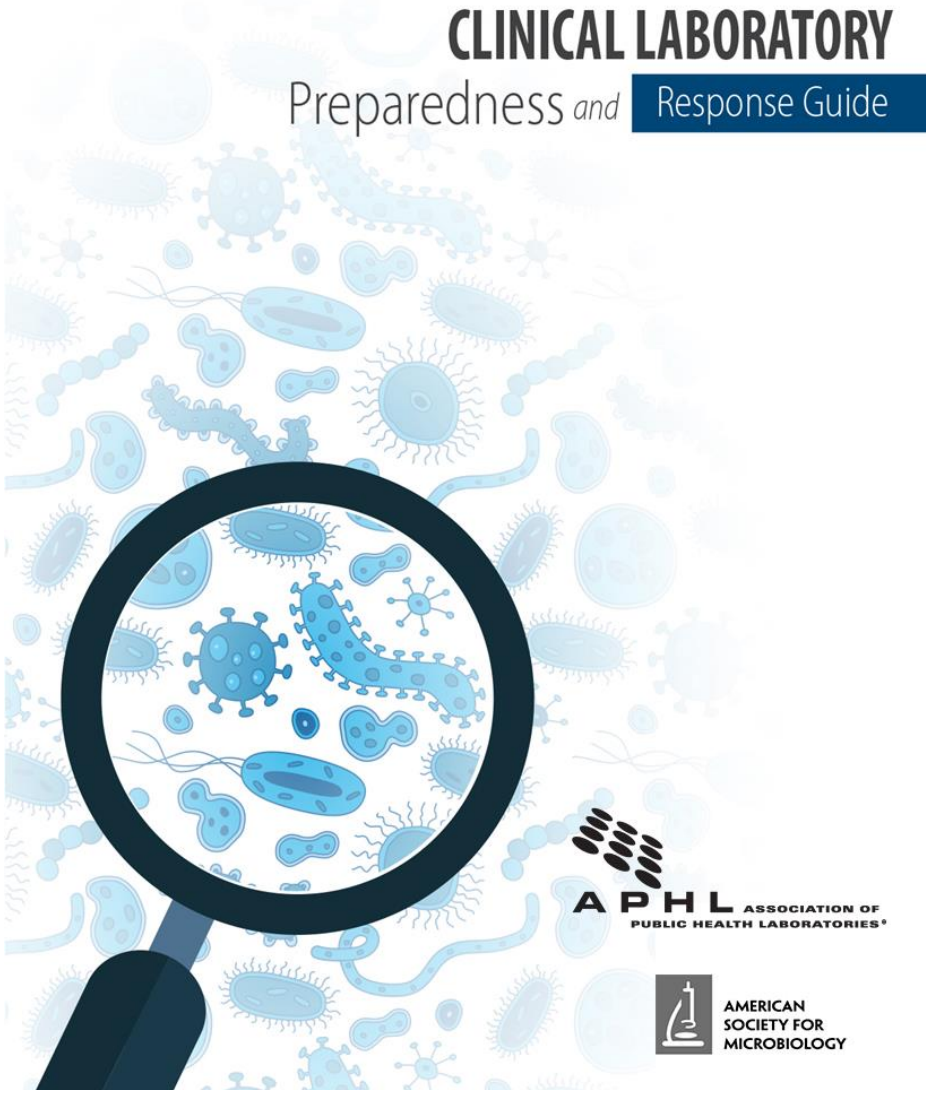


Three New Sections Added

- Biosafety Training and Competency
- MALDI-TOF MS
- Prion Diseases and Job Aid

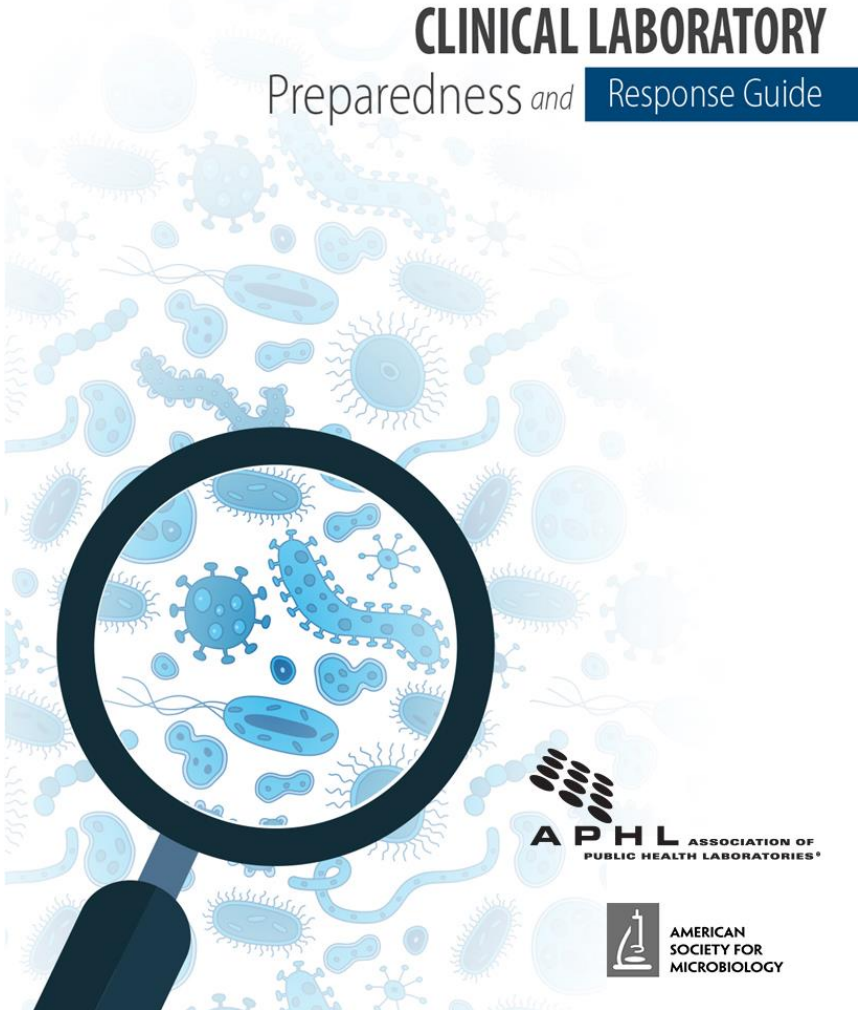


Prion photomicrograph
CDC PHIL



New and Updated Job Aids

- Decontamination of Select Agents Isolated in the Clinical Laboratory
- Biothreat Agent Biosafety Awareness Flow Chart (NEW)
- Biosecurity Checklist (NEW)
- Biosecurity Risk Management Worksheet (NEW)
- Prion Diseases Job Aid
- MALDI-TOF MS Safety Job Aid



Decontamination of Select Agents Isolated in the Clinical Laboratory

Decontamination of Select Agents Isolated in the Clinical Laboratory

Select Agent regulations detailed in 7 CFR 331, 9 CFR 121 and 42 CFR 73 dictate that material containing an identified select agent must be either be **destroyed or transferred** to a select agent registered facility within 7 days from confirmation (unless an extension is granted from CDC). Select agents may only be held more than 7 days from confirmation by facilities that are registered and approved by CDC and/or USDA to possess those specific select agents. Once an isolate from a patient specimen in a non-select agent registered clinical lab has been confirmed by a registered laboratory response network (LRN) reference laboratory as a select agent, within 7 days the non-registered clinical lab must either **destroy** all other relevant patient specimens and cultures remaining in their possession, **or obtain permission from CDC to transfer** them to the nearest LRN reference laboratory that is registered to possess the specific select agent.

If a clinical lab chooses to **transfer the relevant specimens and cultures** after organism confirmation, the lab personnel will need to work with their LRN reference laboratory to ensure the proper paperwork (e.g., APHIS/CDC Form 2) and transfer protocols are followed in compliance with all applicable local, state, and federal shipping regulations, and carrier/courier requirements **prior to transport**. Transfer considerations should be discussed between clinical laboratories and LRN reference laboratories *before* LRN reference testing is conducted to avoid some potential shipping restrictions or dilemmas. If a facility does not have an autoclave on-site and chooses not to chemically decontaminate the cultures, all positive cultures including blood culture bottles must be transferred to an appropriate select agent registered laboratory approved and willing to accept the specific select agent material.

If a non-registered clinical lab decides to **destroy the relevant specimens and cultures** in-house, inactivation using an on-site autoclave or chemical decontamination method must be performed before final disposal or transferring the items to a medical waste contractor for destruction and final disposal. Specimens associated with an identified select agent cannot be directly discarded into the biohazardous waste stream like other regulated infectious medical waste materials because the material would be classified as Category A waste and restricted according to both the select agent regulations and the US Department of Transportation Hazardous Material regulations (49 C.F.R., Parts 171-180). Autoclaving is the preferred method of destruction, however when an autoclave is not available, chemical decontamination may be the only feasible option. For both chemical inactivation decontamination procedures below, the clinical laboratory should note the date, amount/quantity of material being destroyed, method of destruction, and the laboratorian(s) performing the procedures for record keeping purposes.

Non-registered clinical labs are not required to have a validated select agent inactivation protocol but may use these decontamination procedures as a recommended best practice.

Chemical Inactivation Decontamination Process for Samples and Cultures

1. Prepare a fresh (daily) 10% (1:10) solution of household bleach in a receptacle large enough to submerge all containers/plates containing the select agent.
2. Working in a biological safety cabinet (BSC), **slowly** and completely immerse open sample/culture containers in the bleach solution.
3. Leave the open and submerged containers in the bleach solution overnight.
4. Once overnight inactivation is complete, turn the sink faucet on and discard the bleach solution down the drain with running tap water.
5. Place the inactivated sample/culture plates and containers in a biohazard bag and discard them with the other biohazardous waste that is transported off site by a medical waste management contractor for final treatment and disposal.

Chemical Inactivation Decontamination Process for Blood Culture Bottles

If an organism is subcultured from a blood culture bottle and a LRN reference laboratory confirms the organism as a select agent, or if the patient is diagnosed with a select agent such as smallpox or a viral hemorrhagic fever (VHF), the associated blood culture bottles and any additional bottles or cultures that would contain the organism, must be decontaminated before transport off site within 7 days from confirmation. Autoclaving is the preferred destruction method since the contents in these bottles cannot be easily decontaminated using chemical inactivation decontamination.

- Bring all needed materials into a BSC including the blood culture bottle(s), a syringe, and a small amount of undiluted household bleach (e.g., ~50mL per blood culture bottle to decontaminate).
- Working in a BSC, the blood culture bottles can be chemically decontaminated by adding straight (not diluted) household bleach to the bottle to obtain a final concentration of 1-2% sodium hypochlorite (20 - 40% household bleach and ~10,000 ppm available chlorine) within the bottle. The higher undiluted bleach concentration works well for inactivation and accounts for the large amount of organic material present.
- Cover the top of the bottle with a disinfectant soaked gauze pad (e.g., 10% bleach) to contain any splashes and **slowly** inject the undiluted bleach into the bottle(s).
- Discard the used syringe in the sharps container inside the BSC.
- Let the bottle(s) sit overnight in the BSC and post a warning/safety sign for it.
- Package the inactivated bottle(s) with other biohazardous waste that is transported off site by a medical waste management contractor for final treatment and disposal.

Toxin Inactivation

For specimens to which there may be a suspected or confirmed select agent toxin present, the clinical lab should consult with their LRN reference laboratory about specific concerns and inactivation methods. In general, most toxins associated with biological specimens can be easily inactivated or denatured by steam sterilization, dry heat or chemical means such as sufficient contact time with a fresh (daily) 10% solution of prepared bleach, or another chemical such as sodium hydroxide (NaOH, 0.1N). Consult the Biosafety in Microbiological and Biomedical Laboratories (BMBL), section VIII-G for specific toxin information and recommended inactivation methods.
https://www.cdc.gov/labs/BMBL.html

Preparation of Bleach Solutions Containing 5.25 – 6.15% NaOCl:

Dilution	Chlorine (ppm)
None / straight, concentrated bleach	52,500 – 61,500
(10% bleach) 1:10, or 1⅓ cup:1 gallon, or 100mL:1000mL	5,250 – 6,150
(5% bleach) 1:20, or ¾ cup:1 gallon	2,625 – 3,075
(1% bleach) 1:100, or ¼ cup:1 gallon	525 - 615

(PPM = Parts per million), NaOCl = sodium hypochlorite

Decontamination of Material That May Contain Select Agent Spores

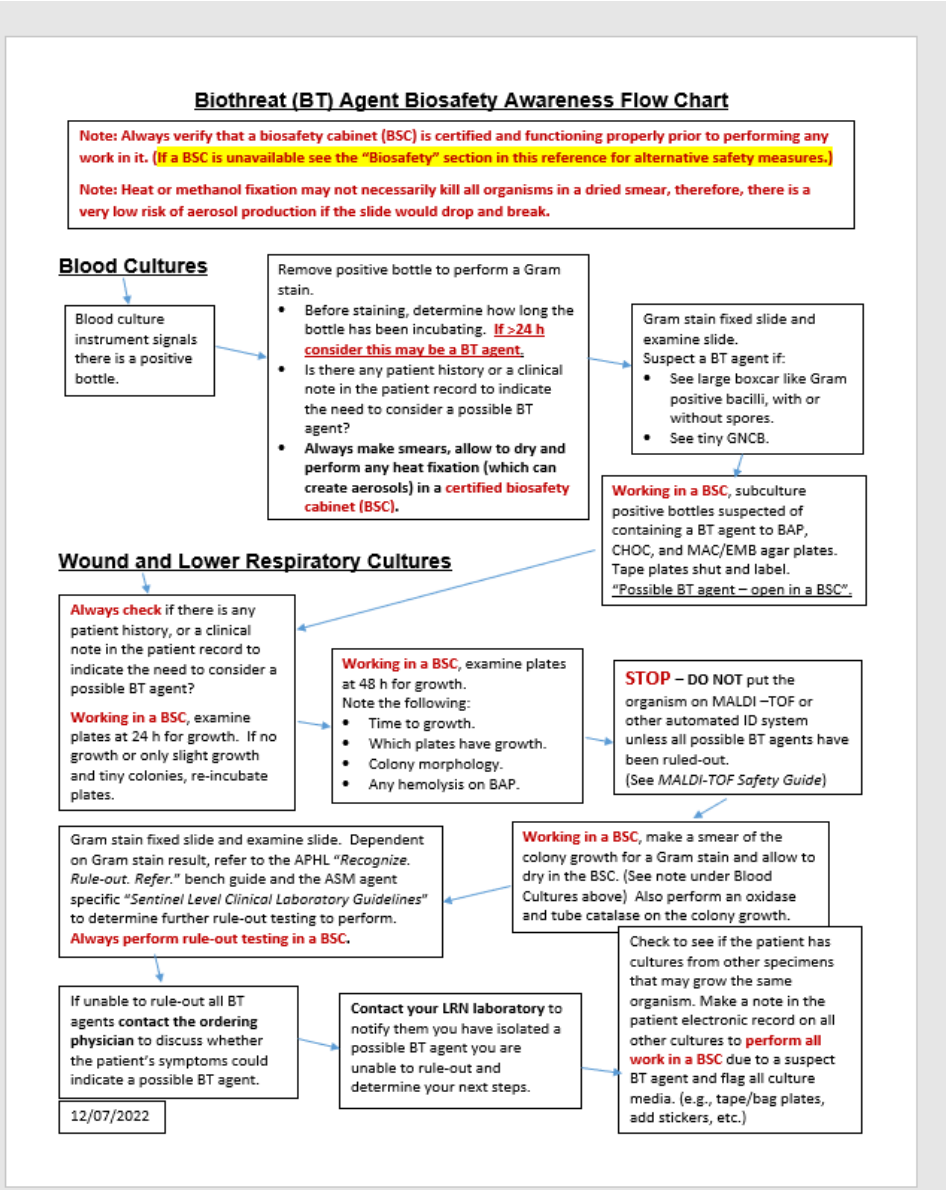
If there is a concern that select agent spores (e.g., *Bacillus anthracis* spores) may be present, or if there is a need to decontaminate material that may contain spores, stronger disinfectants than those used routinely may be required. Clinical labs should consult with their LRN reference laboratory about specific concerns and decontamination methods. The pH of a bleach solution may also need to be checked and amended in order to efficiently decontaminate spores by chemical inactivation methods. Consult the EPA list of approved disinfectants for additional info.
https://www.epa.gov/pesticide-registration/selected-epa-registered-disinfectants

Notes: Bleach is usually between 5.25% - 6.15% sodium hypochlorite, or 52,500 – 61,500 ppm available chlorine, but will vary depending on the manufacturer and if it is "regular" strength (typically 5.25%) vs. "ultra" strength. "Ultra" strength products are typically about 6.15%, but the germicidal Chlorox brand can be up to ~8.25%. It is important to know the concentration of the bleach being used to ensure the desired final concentration will be obtained when preparing the solution. Different bleach products may have different concentrations of hypochlorite. Hypochlorite concentrations will degrade over time and with storage conditions. Working bleach solutions will also be affected and have a decreased efficacy by the amount of organic material that may be present in the material intended to be decontaminated. Follow all manufacturer product specific instructions.

References:

1. https://www.cdc.gov/infectioncontrol/guidelines/disinfection/disinfection-methods/chemical.html#Chlorine
2. https://www.aphl.org/programs/preparedness/Biosafety-and-Biosecurity/Documents/Practical%20Disinfection%20Guidance%20for%20the%20Clinical%20Laboratory.pdf
3. https://www.selectagents.gov/tgd-intro.html
4. https://multimedia.3m.com/mws/media/735976O/disinfection-with-bleach-tech-talk.pdf
5. https://www.cdc.gov/Mmwr/pdf/other/su6101.pdf
6. https://www.selectagents.gov/regulations/index.htm
7. https://www.phmsa.dot.gov/transporting-infectious-substances/transporting-infectious-substances-overview
8. https://www.cdc.gov/labs/BMBL.html
9. https://www.epa.gov/pesticide-registration/selected-epa-registered-disinfectants

Biothreat Agent Biosafety Awareness Flow Chart



Biothreat (BT) Agent Biosafety Awareness Flow Chart

Note: Always verify that a biosafety cabinet (BSC) is certified and functioning properly prior to performing any work in it. (If a BSC is unavailable see the "Biosafety" section in this reference for alternative safety measures.)

Note: Heat or methanol fixation may not necessarily kill all organisms in a dried smear, therefore, there is a very low risk of aerosol production if the slide would drop and break.

Blood Cultures

Blood culture instrument signals there is a positive bottle.

Remove positive bottle to perform a Gram stain.

- Before staining, determine how long the bottle has been incubating. **If >24 h consider this may be a BT agent.**
- Is there any patient history or a clinical note in the patient record to indicate the need to consider a possible BT agent?
- **Always make smears, allow to dry and perform any heat fixation (which can create aerosols) in a certified biosafety cabinet (BSC).**

Gram stain fixed slide and examine slide.
Suspect a BT agent if:

- See large boxcar like Gram positive bacilli, with or without spores.
- See tiny GNCB.

Working in a BSC, subculture positive bottles suspected of containing a BT agent to BAP, CHOC, and MAC/EMB agar plates. Tape plates shut and label. "Possible BT agent – open in a BSC".

Wound and Lower Respiratory Cultures

Always check if there is any patient history, or a clinical note in the patient record to indicate the need to consider a possible BT agent?

Working in a BSC, examine plates at 24 h for growth. If no growth or only slight growth and tiny colonies, re-incubate plates.

Working in a BSC, examine plates at 48 h for growth.
Note the following:

- Time to growth.
- Which plates have growth.
- Colony morphology.
- Any hemolysis on BAP.

STOP – DO NOT put the organism on MALDI –TOF or other automated ID system unless all possible BT agents have been ruled-out.
(See *MALDI-TOF Safety Guide*)

Working in a BSC, make a smear of the colony growth for a Gram stain and allow to dry in the BSC. (See note under Blood Cultures above) Also perform an oxidase and tube catalase on the colony growth.

Gram stain fixed slide and examine slide. Dependent on Gram stain result, refer to the APHL "*Recognize. Rule-out. Refer.*" bench guide and the ASM agent specific "*Sentinel Level Clinical Laboratory Guidelines*" to determine further rule-out testing to perform. **Always perform rule-out testing in a BSC.**

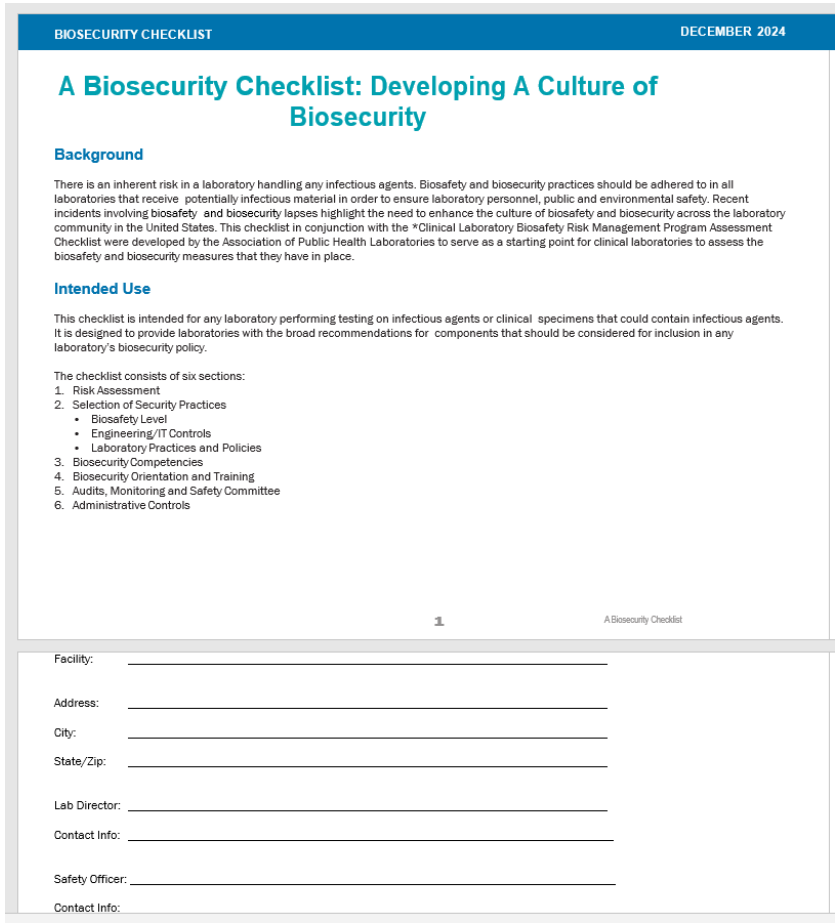
If unable to rule-out all BT agents **contact the ordering physician** to discuss whether the patient's symptoms could indicate a possible BT agent.

Contact your LRN laboratory to notify them you have isolated a possible BT agent you are unable to rule-out and determine your next steps.

Check to see if the patient has cultures from other specimens that may grow the same organism. Make a note in the patient electronic record on all other cultures to **perform all work in a BSC** due to a suspect BT agent and flag all culture media. (e.g., tape/bag plates, add stickers, etc.)

12/07/2022

Biosecurity Checklist



BIOSECURITY CHECKLIST DECEMBER 2024

A Biosecurity Checklist: Developing A Culture of Biosecurity

Background

There is an inherent risk in a laboratory handling any infectious agents. Biosafety and biosecurity practices should be adhered to in all laboratories that receive potentially infectious material in order to ensure laboratory personnel, public and environmental safety. Recent incidents involving biosafety and biosecurity lapses highlight the need to enhance the culture of biosafety and biosecurity across the laboratory community in the United States. This checklist in conjunction with the *Clinical Laboratory Biosafety Risk Management Program Assessment Checklist were developed by the Association of Public Health Laboratories to serve as a starting point for clinical laboratories to assess the biosafety and biosecurity measures that they have in place.

Intended Use

This checklist is intended for any laboratory performing testing on infectious agents or clinical specimens that could contain infectious agents. It is designed to provide laboratories with the broad recommendations for components that should be considered for inclusion in any laboratory's biosecurity policy.

The checklist consists of six sections:

1. Risk Assessment
2. Selection of Security Practices
   - Biosafety Level
   - Engineering/IT Controls
   - Laboratory Practices and Policies
3. Biosecurity Competencies
4. Biosecurity Orientation and Training
5. Audits, Monitoring and Safety Committee
6. Administrative Controls

1 A Biosecurity Checklist

Facility: _____

Address: _____

City: _____

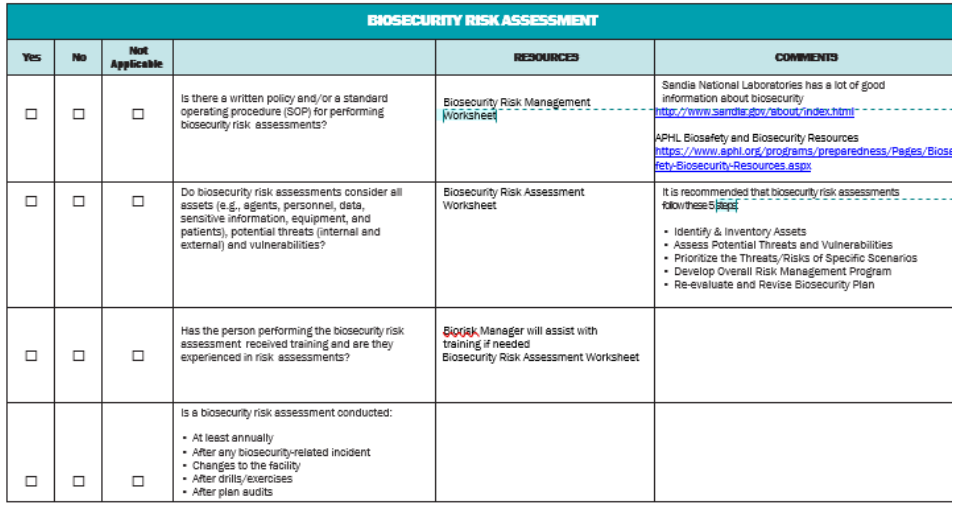
State/Zip: _____

Lab Director: _____

Contact Info: _____

Safety Officer: _____

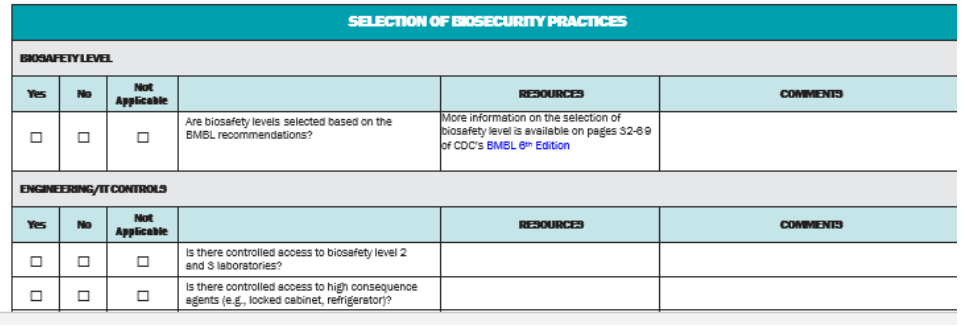
Contact Info:



BIOSECURITY RISK ASSESSMENT

Yes	No	Not Applicable		RESOURCES	COMMENTS
☐	☐	☐	Is there a written policy and/or a standard operating procedure (SOP) for performing biosecurity risk assessments?	Biosecurity Risk Management Worksheet	Sandia National Laboratories has a lot of good information about biosecurity http://www.sandia.gov/about/index.html APHL Biosafety and Biosecurity Resources https://www.aphl.org/programs/preparedness/Pages/Biosafety-Biosecurity-Resources.aspx
☐	☐	☐	Do biosecurity risk assessments consider all assets (e.g., agents, personnel, data, sensitive information, equipment, and patients), potential threats (internal and external) and vulnerabilities?	Biosecurity Risk Assessment Worksheet	It is recommended that biosecurity risk assessments follow these 5 steps: • Identify & Inventory Assets • Assess Potential Threats and Vulnerabilities • Prioritize the Threats/Risks of Specific Scenarios • Develop Overall Risk Management Program • Re-evaluate and Revise Biosecurity Plan
☐	☐	☐	Has the person performing the biosecurity risk assessment received training and are they experienced in risk assessments?	Biorisk Manager will assist with training if needed Biosecurity Risk Assessment Worksheet	
☐	☐	☐	Is a biosecurity risk assessment conducted: • At least annually • After any biosecurity-related incident • Changes to the facility • After drills/exercises • After plan audits		

3 A Biosecurity Checklist



SELECTION OF BIOSECURITY PRACTICES

BIOSAFETY LEVEL

Yes	No	Not Applicable		RESOURCES	COMMENTS
☐	☐	☐	Are biosafety levels selected based on the BMBL recommendations?	More information on the selection of biosafety level is available on pages 32-69 of CDC's BMBL 6th Edition	

ENGINEERING/IT CONTROLS

Yes	No	Not Applicable		RESOURCES	COMMENTS
☐	☐	☐	Is there controlled access to biosafety level 2 and 3 laboratories?		
☐	☐	☐	Is there controlled access to high consequence agents (e.g., locked cabinet, refrigerator)?		

Biosecurity Risk Management Worksheet

Biosecurity Risk Management Worksheet

Step 1: Identify and Prioritize Assets

Step 2: Assess Potential Threats and Vulnerabilities

Step 3: Analyze the Risk of Specific Security Scenarios (Threat/Risk Prioritization Chart below)

Step 4: Plan and Develop an Overall Biosecurity Program including Mitigation

Step 5: Re-evaluate the Laboratory's Biosecurity Program and Modify Protection Measures

Physical Security and Access Controls

Potential Problems (Vulnerabilities)	*Solutions (Possible Preventative Measures)*

Personnel Management

Potential Problems (Vulnerabilities)	*Solutions (Possible Preventative Measures)*

Inventory & Accountability

Potential Problems (Vulnerabilities)	*Solutions (Possible Preventative Measures)*

Transport of Agents

Potential Problems (Vulnerabilities)	*Solutions (Possible Preventative Measures)*

Prion Diseases Job Aid

Prion Diseases Job Aid

Specimen Types

There are limited clinical laboratories that perform diagnostic testing for prion diseases (e.g., National Prion Disease Pathology Surveillance Center (NPDPSC)). Specimens are grouped into high infectivity, low infectivity, and no detectable infectivity categories based on potential for quantity of prions present. As such, laboratories serving as intermediaries (i.e., packaging and shipping to NPDPSC) or performing other diagnostic testing on the same specimen should establish appropriate risk level handling protocols. The NPDPSC performs lab testing for central nervous system tissue (e.g., brain biopsy (gray matter)), cerebrospinal fluid, and blood specimen types. Since central nervous system tissue (CNS) (e.g., brain tissue, spinal cord) and coverings are the highest infectivity risk (e.g., high prion concentrations) sample types, institutions/hospitals/facilities are discouraged from sampling these high risk tissues from viable patients with suspected or confirmed prion disease. However, if CNS tissue is sampled, appropriate precautions must be taken from collection, handling, and transport to the NPDPSC. Tissue may be sampled in autopsy; however, it is advised that autopsy only be conducted on suspected/confirmed patients by facilities that have experience performing autopsy on prion disease confirmed patients. The primary specimen utilized for prion diagnosis in viable patients is cerebrospinal fluid (CSF). Blood may be used for PRNP Genetic Testing for diagnosing genetic prion disease. It is likely that prions are also found in the kidney, liver, lung, spleen, thymus, lymph nodes, and placenta; laboratorians should utilize standard precautions when handling all samples, including those fixed in formalin.

Clinical Laboratory Risks / Laboratory Specific Safety Concerns

Clinical laboratories should request advanced warning from Infection Prevention and providers regarding referral of specimens from patients with suspected CJD. Optimally, interventional Radiology staff should contact Infection Prevention when samples are collected to ensure that initial laboratory processors utilize standard precautions and a Class II biological safety cabinet (BSC).

The primary hazard in the lab is accidental parenteral (traumatic) inoculation; but there is also risk of infection from specimen spills or splashes. Adherence to Standard Precautions during any primary specimen handling and laboratory procedure will reduce the risk of infection. Laboratorians working with prion-infected or contaminated material should take extreme care to avoid accidental puncture of the skin i.e., follow a risk reduction protocol.

Biosafety level 3 (BSL-3) facilities, practices, and containment equipment are recommended for dedicated activities involving prions. If a BSL-3 facility is unavailable for a laboratory performing prion specific testing or research, work may be performed in a BSL-2 with enhanced precautions. The ability to work under BSL-2 with enhanced precautions depends on the nature of the manipulations that will be done as well as the quantity of prion burden and type of specimens utilized i.e., necropsy or autopsy tissues. At a minimum, laboratorians performing prion specific diagnostic testing should wear gown, eye protection and gloves (Standard precautions) and work within a Class II BSC with enhanced precautions. Any tasks involving potential for traumatic inoculation i.e., use of a microtome or changing the blade on a microtome should include use of cut resistant gloves to avoid parenteral inoculation.

Clinical laboratories should conduct their own facility-specific risk assessment(s) and develop appropriate precautionary procedures prior to any work with potential prion-containing specimen

samples. They are also encouraged to consult with their local or state public health department, public health laboratory, the CDC, or other prion related groups such as NPDPSC, if there are any questions or concerns.

Occupational Exposure, Treatment, and Post-Exposure Management

Prions are transmissible by inoculation, ingestion, or transplantation of infected tissues or homogenates. Prion infectivity is high in the brain, other CNS tissues, and eyes while lower infectivity is associated with lymphoid tissues and CSF. While cases of occupational exposure to prion disease in healthcare workers have been reported, there have been no reported confirmed cases of occupational transmission of transmissible spongiform encephalopathy (TSE) to humans within the clinical diagnostic setting. Currently, there is no cure, immunization, or prophylaxis for prion diseases. Treatment remains supportive, and no specific therapy has been shown to stop the progression of these diseases. There is a distinct difference in occupational risk levels between routine clinical diagnostic labs and prion disease diagnostic labs as well as prion disease research laboratories.

In case of exposure: https://www.cdc.gov/prions/cjd/treatment.html

- Contamination of unbroken skin with internal body fluids or tissues: wash with detergent and abundant quantities of warm water (avoid scrubbing), rinse, and dry.
  - Brief exposure (1 minute, to 0.1N NaOH or a 1:10 dilution of bleach) can be considered for maximum safety. *Extreme caution needs to be taken if applying these chemicals to skin.*
- Needle sticks or lacerations: gently encourage bleeding; wash (avoid scrubbing) with warm soapy water, rinse, dry and cover with a waterproof dressing (sutures may be necessary for larger wounds). Report according to hospital or healthcare facility/laboratory procedure.
- Splashes into the eye or mouth: irrigate with either saline (eye) or tap water (mouth); report according to hospital or healthcare facility/laboratory procedures.

Infection Control

The CDC and WHO provide infection control related information here:

- https://www.cdc.gov/prions/cjd/infection-control.html
- https://apps.who.int/iris/handle/10665/66707

Decontamination

Prions are notoriously difficult to inactivate and are characterized by relative resistance to conventional inactivation procedures including irradiation, boiling, dry heat, and harsh chemicals such as formalin, betapropiolactone, and alcohols. More effective protocols include enzymatic treatments with sodium dodecyl sulfate (SDS), proteinase K (pK), and pronase three-stage procedure; vaporized hydrogen peroxide (HVP), 4% SDS in 1% acetic acid at 65–134°C, or mildly acidic hypochlorous acid. The safest and most unambiguous method for ensuring that there is no risk of residual infectivity on contaminated surgical instruments and other materials is to discard and destroy them by incineration. Contaminated disposable surgical instruments or materials can be incinerated at 1000°C (1832°F) or greater. However, disposable instruments are not always feasible. Sterilization of reusable surgical instruments and decontamination of surfaces are performed in accordance with recommendations described by the CDC and the WHO infection control guidelines. See Annex III.2. Autoclave/chemical methods for heat-resistant instrument of the *WHO Infection Control Guidelines for Transmissible Spongiform Encephalopathies* report for further guidance. Table 3 (*Tissue Preparation for Human CJD and Related*

Diseases) and Table 4 (*Prion Inactivation Methods for Reusable Instruments and Surfaces*) within the Prion Disease Section of the BMBL provides additional procedure information. However, be aware that the BMBL instructions are largely geared toward research based facilities working with purified prions instead of routine clinical laboratories who do not perform prion specific diagnostic testing.

- https://apps.who.int/iris/handle/10665/66707
- https://www.cdc.gov/labs/BMBL.html

Testing

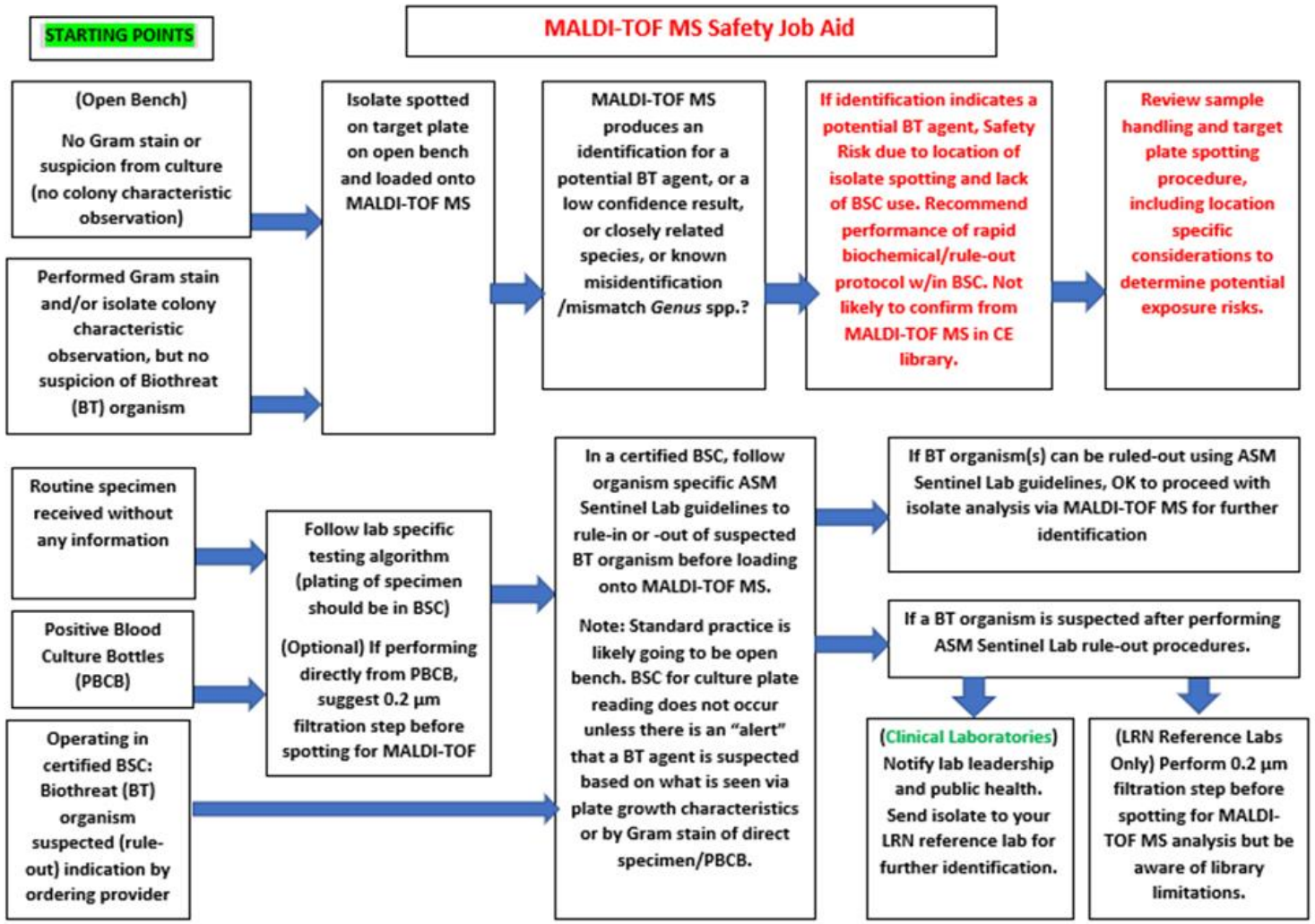
Several tests can help diagnose CJD including electroencephalography (EEG), CSF-based tests for Prion markers e.g., real-time quaking-induced conversion (RT-QuIC), Total Tau (ELISA), and 14-3-3γ (ELISA), and magnetic resonance imaging (MRI). Diagnostic criteria according to the CDC for sporadic, iatrogenic, or familial CJD can be found here: https://www.cdc.gov/prions/cjd/diagnostic-criteria.html Genetic testing information, research studies, and clinical trials, as well as information about other diagnosis and management resources can be found here: https://ghr.nlm.nih.gov/condition/prion-disease#diagnosis. Blood may be used only for PRNP Genetic Testing.

Shipping

Prion samples, regardless of the type of specimen, are acceptable to be classified and shipped as a UN 3373, Biological Substance, Category B material. Laboratories should communicate with the diagnostic testing laboratory and any couriers/carriers regarding additional or specific instructions and required documentation (e.g., testing submission form). The NPDPSC provides additional resources and guidance for shipping by sample type, and information about obtaining Prion Tissue Kits.

- https://case.edu/medicine/pathology/divisions/national-prion-disease-pathology-surveillance-center/resources-professionals/contact-and-shipping-information

MALDI-TOF MS Safety Job Aid



Acknowledgements

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  - Courtney Freestone
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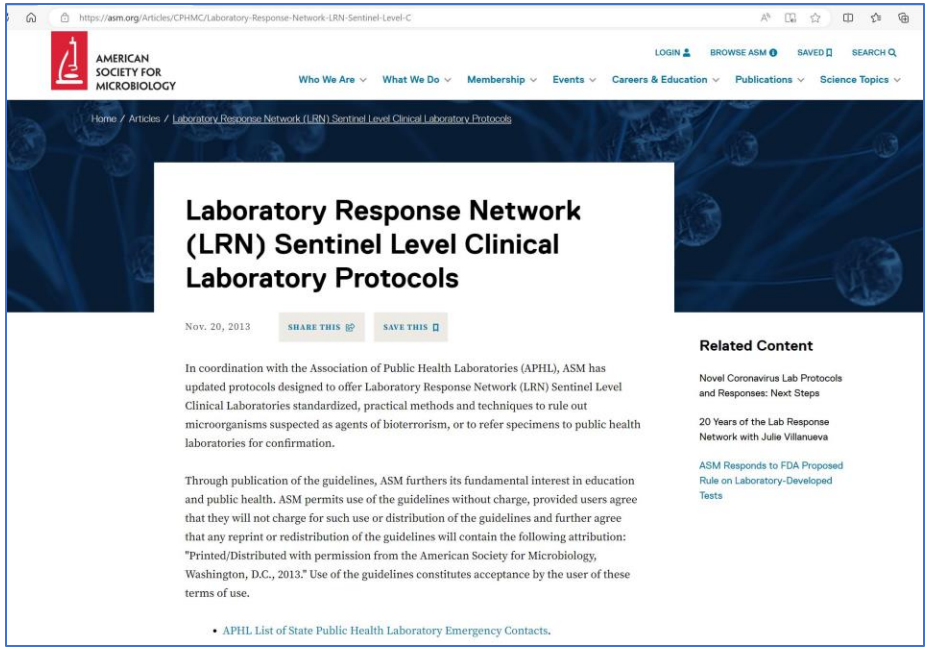
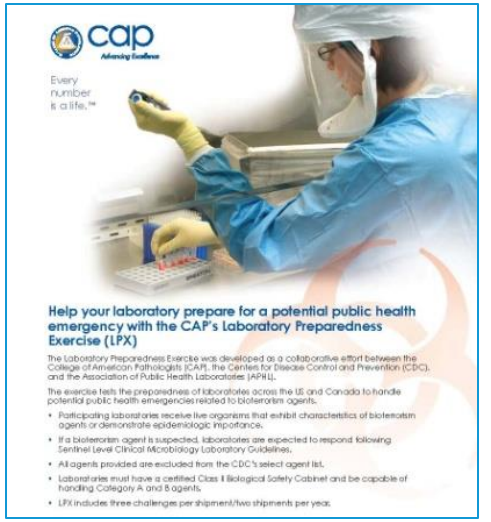
Partners in Laboratory Preparedness and Response

- American Society for Microbiology: Sentinel Level Clinical Microbiology Laboratory Guidelines
- College of American Pathologists: Laboratory Preparedness Exercise
- MOU: Diagnostic Surge Testing Capacity for Public Health Emergencies (Many partners)





Resources

ASM: LRN Sentinel Level Clinical Laboratory Protoco

CAP: Laboratory Preparedness Exercise

CDC:

- Laboratory Outreach Communication System
- OneLab Network

APHL:

- Sentinel Clinical Laboratory Definition
- Benchcards
- Biothreat Agents Poster
- Clinical Laboratory Preparedness and Response Guide
- Biothreat Response: Sentinel Laboratory Training Toolbox
- Biosafety and Biosecurity

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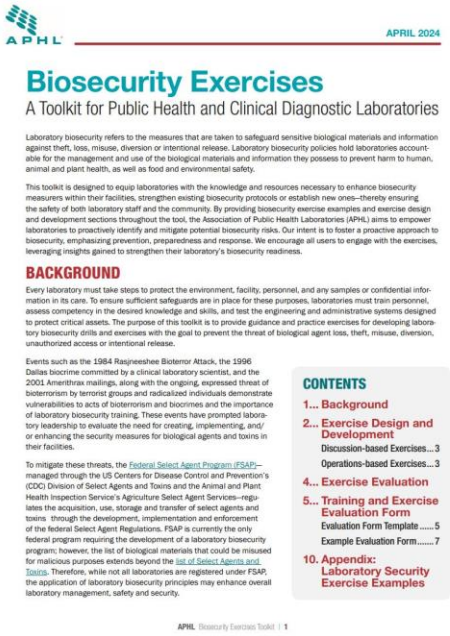

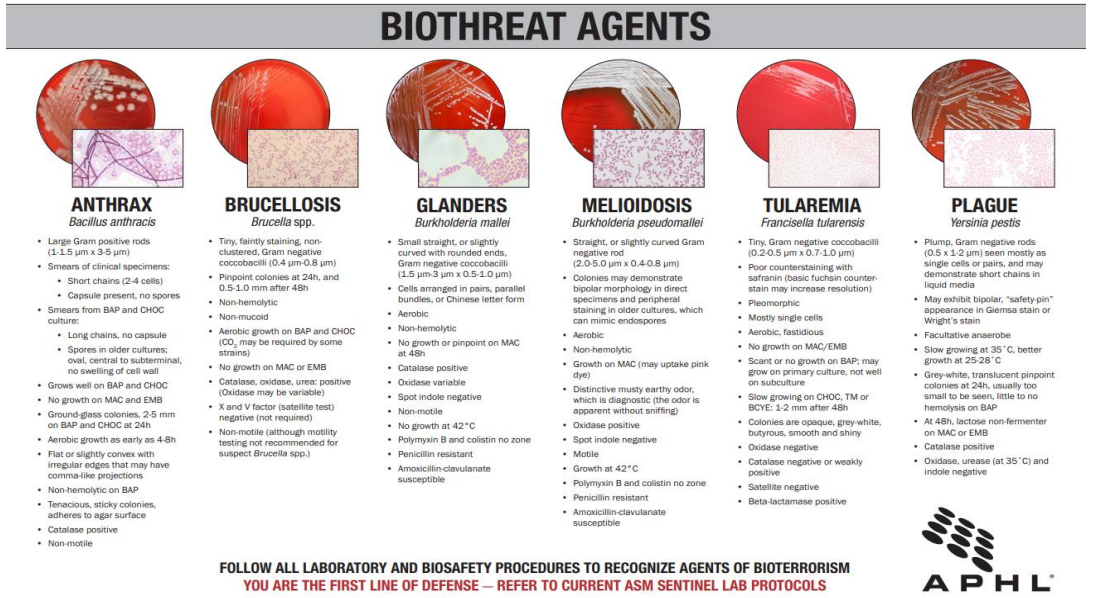

Resources


BIOLOGICAL SPILL CLEAN-UP


EXIT


APHL
APHL ASSOCIATION OF PUBLIC HEALTH LABORATORIES


APHL ASSOCIATION OF PUBLIC HEALTH LABORATORIES

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LAB Culture (podcast)

APHL LAB CULTURE

Lab Matters

Attend our conferences!

Connect with APHL on X, Facebook, LinkedIn, Instagram and CollABorate Communities of Practice

2025 National APHL Conferences

ID Lab Con
Pasadena, California
March 25 – 27, 2025

APHL 2025 Annual Conference
Portland, Oregon
May 5 – 8, 2025

14th National Conference on Laboratory Aspects of Tuberculosis
Atlanta, Georgia
June 3–4, 2025

2025 APHL Newborn Screening Symposium
Providence, Rhode Island
October 5 – 9, 2025

Advancing HIV, STI and Viral Hepatitis Conference
Atlanta, Georgia
November 3–7, 2025

Thank You!

Contact:
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Questions?

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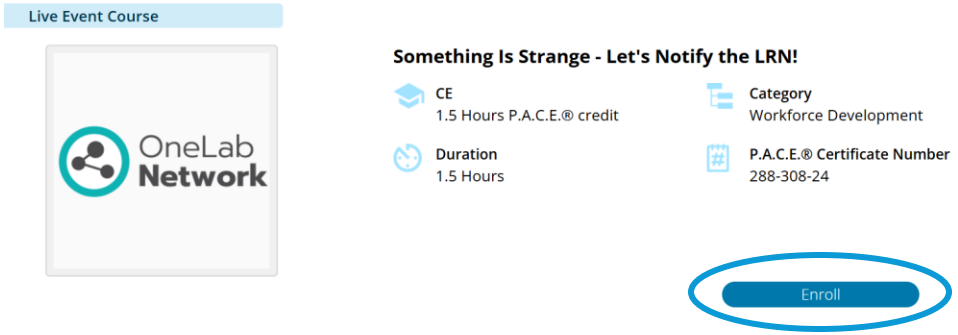
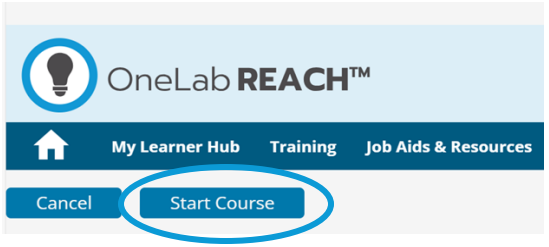
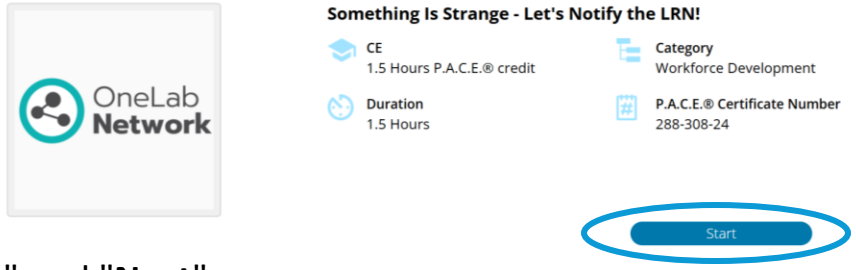


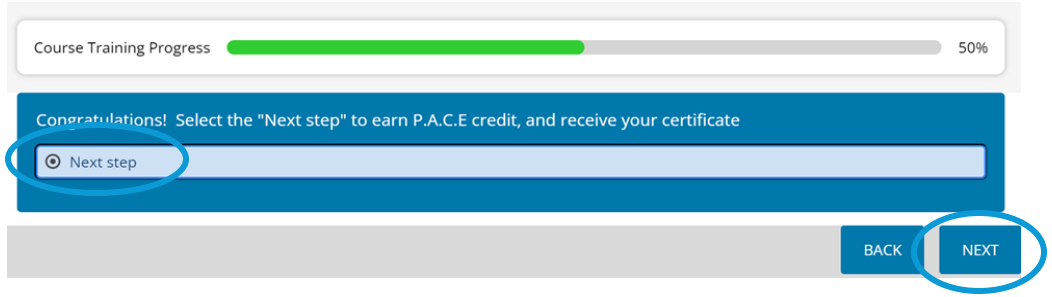
5. Select "**Start Course**".



6. Select "**Start**".



7. Select "**Next step**" and "**Next**".



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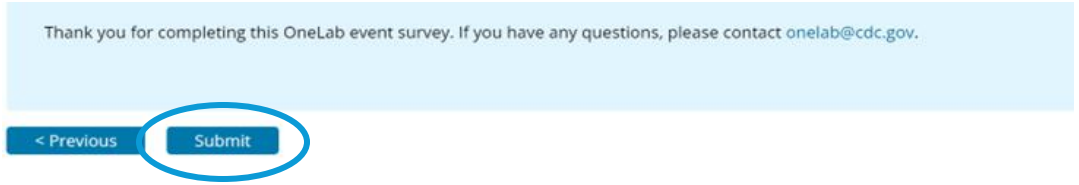

Upcoming Event!

Securing the Future: Exploring the Importance of Biosecurity

January 29, 2025, 12:00 p.m. – 1:00 p.m. ET

Additional details coming soon!
Register Now!

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